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ABSTRACT

Results are presented, in the form of an annual report, of the standardized test performance of elementary and secondary school students in the Montgomery County Public Schools (MCPS), Rockville, Maryland. This year, as in the past, the report includes an update of the historical record of countywide test results on the Iowa Tests of Basic Skills (ITBS), the Cognitive Abilities Test (CAT), the Tests of Academic Progress (TAP), scores from the College Board tests (CEEB), and the data from the Maryland Functional Reading Test (MFRT). This year, the test report has been expanded to include: (1) a longitudinal analysis of the test performance of students attending MCPS in both 1976 and 1978; (2) a comprehensive report of test results for individual schools, including for each school an analyses of longitudinal data and of the variations in level of achievement; (3) an analysis of the four major tests used systemwide, discussing what the test scores mean and important limitations on their utilization; and (4) a glossary of technical testing terms designed to assist in understanding this report. A breakdown of test results by racial/ethnic groups and by sex is also included. (Author/GDC)

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**DEPARTMENT OF
EDUCATIONAL
ACCOUNTABILITY**

**Annual
Test
Report
1977-78**

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MONTGOMERY COUNTY PUBLIC SCHOOLS
ROCKVILLE, MARYLAND

DECEMBER 1978

CHARLES M. BERNARDO
SUPERINTENDENT OF SCHOOLS

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EXECUTIVE SUMMARY

For several years, the Montgomery County Public Schools (MCPS) have presented an annual report of performance of students on a standard set of tests. This year, as in the past, the report includes an update of the historical record of countywide test results on the Iowa Tests of Basic Skills (ITBS), the Cognitive Abilities Test (CAT), the Tests of Academic Progress (TAP), scores from the College Board tests (CEEB), and the data from the Maryland Functional Reading Test (MFRT). In addition, this year, in response to both school staff needs and increased public demand for accountability, the test report has been expanded. The new features of this year's report are:

- o A longitudinal analysis of the test performance of students attending MCPS in both 1976 and 1978.
- o A comprehensive report of test results for individual schools, including for each school an analyses of longitudinal data and of the variations in level of achievement.
- o An analysis of the four major tests used systemwide, discussing what the test scores mean and important limitations on their utilization.
- o A glossary of technical testing terms designed to assist in understanding this report.

A breakdown of test results by racial/ethnic groups and by sex is also included, instead of being presented separately as in the past. While some of the test information, specifically the historical record update, racial/ethnic breakdown, and College Board results were released earlier, they are included here to provide a comprehensive report on the 1977-78 school year.

Historical Record

Performance of county students is generally at an all-time high on tests administered systemwide: the CAT; the ITBS in Grades 3, 5, 7, and 9; and the MFRT in Grades 7 and 11. The one exception to this trend was Grade 11 performance on the CAT and the TAP, where only one of seven tests was at an all-time high in 1977-78.

Longitudinal Results

Students attending the Montgomery County Public Schools who were tested in both 1976 and 1978 (the longitudinal group) scored higher on the ITBS and CAT than students who migrated in or out of the county and were present for only one test period. The difference, moderate in size but consistent, affects the picture of systemwide performance. Countywide test score averages would be approximately three percentile rank points higher if only the scores of the longitudinal group were included. This finding negates the hypothesis, which has been suggested, that test scores are at an all-time high due not to superior teaching, but to brighter

children entering the county schools. This finding proves the opposing hypothesis, that children entering the county have a mild depressing effect on test scores.

For the county as a whole and for Black and White students in particular, no differences exist in the performance of the two non-longitudinal groups (students tested only in 1976 vs. students tested only in 1978) relative to that of the longitudinal sample. This means that the performance of Black and White students who entered the school system was, when compared to the longitudinal group, as high as the Black and White students leaving the system. For Asian students, however, important differences related to migration were found. Asian students who entered MCPS after the 1976 testing performed less well on the ITBS, relative to the longitudinal group, than students who left after the 1976 testing. For this group, migration patterns appear to result in lower achievers taking the place of higher achievers in the county schools.

A point of concern is that students in both the longitudinal and non-longitudinal cohorts rank lower in terms of percentiles in the fifth than in the third grade, in the seventh than in the fifth grade, etc. This decline has been seen in countywide test data for several years. There are several competing reasons for this:

1. Problems in test norming, i.e., older students in the norming groups were relatively speaking, brighter or more testwise than their younger counterparts.
2. A different curricular emphasis in the secondary schools, i.e., there have been greater changes in secondary school courses of study, than in elementary school courses of study, in the seven years since the test was normed.
3. The achievement levels of students entering MCPS are not as high as the achievement levels of students leaving MCPS over more than the two-year period.
4. Elementary level instruction in MCPS is superior to that provided at the secondary level.

Based on the test data contained in this report, it is not possible for any of these hypotheses to either be definitively supported or refuted. Such issues will require far more intensive examination.

Racial/Ethnic Differences

The breakdown of the test results by racial/ethnic category generally indicated that Asian students scored the highest, followed in order by White, Hispanic, and Black students. This was true for most of the CAT, ITBS, TAP, and MFRT results. The major exception was for Asian students in Grade 11 on the MFRT. They scored below Whites and at roughly the same level as Hispanics. This general trend has also been found on the tests administered nationwide by the National Assessment of Educational

Progress (NAEP) for Whites, Hispanics, and Blacks. All groups performed better than their counterparts in most school districts around the country.

In the spring of 1978, a difference in test scores favoring White over Black students was reported for the 1976-77 school year. Analyses of 1977-78 test data show that Black students reduced the differences between their scores and the scores of White students on the CAT, ITBS, and TAP. While reductions were small, they were consistent across all grade levels tested. White students also tended to close the gap between themselves and Asians. Hispanic students generally fell a little further behind Whites at all grade levels. Additional study is needed to determine why the Hispanic scores declined relative to the other groups. Factors which need to be investigated include the influence of language problems on the scores of Hispanics and the decision rules used to include/exclude students whose primary language is other than English from the testing program.

Sex Differences

Females tended to score higher than males on verbal and language-type tests, while males scored higher on the mathematics-related and science tests on the CAT, ITBS, and the TAP. This was especially true in the secondary grades. Females were also higher on the MFRT.

Sex differences were also noted in the cross-year comparisons. The drop in TAP scores between 1977 and 1978 reported for the county as a whole was not found for female students on the TAP, Grade 11. Means for females were about the same in 1978 as in 1977. Means for males on the TAP, however, were lower in 1978 than 1977 on all six tests and on the TAP composite. This tends to suggest that the phenomenon of decreasing eleventh-grade scores is confined primarily to male students. However, on the verbal and mathematics sections of the SAT, males outscored females both locally and nationally. This suggests two competing correlaries to the hypothesis that the problem centers around male students:

- 1) That the problem is mainly confined to non-college bound youth.
- 2) That the problem is one of motivation, i.e., eleventh grade males do well on the SAT because it is important to them, but less well on the other tests because they have little relevance to their future plans.

College Board Tests

Results from the administration of the tests of the College Entrance Examination Board (CEEB) also show MCPS students performing above the national and state results. Scores on the CEEB Scholastic Aptitude Tests (SAT) were above the national average by 36 points on the Verbal test and 37 points on the Mathematics test. MCPS students were from 9 to 56 points above the national average on the CEEB achievement tests. The percent of MCPS students scoring at the highest two levels on the Advanced Placement Examinations (APE)--49%--was somewhat higher than the national percentages (36%).

In comparing performance for the years 1977 and 1978, the trends on the CEEB tests showed mixed results. The SAT results were almost the same as last year's, while achievement test results declined on 8 of the 12 tests. Performance on the APE showed some improvement. All changes were modest.

School Data

Three types of data on individual school performance are presented in this report. First, the mean scores for each school on each test of the CAT, ITBS, and TAP which was administered are presented. These are the same data provided to each school for inclusion in its Annual School Report. Publishing the school data in this volume provides a central reference source for this information.

Second, a new analysis of individual school performance in terms of the national percentile ranks of the students scoring within the second quartile (25th to 50th percentile) and the third quartile (51st to 75th percentile) is presented. These data, displayed in graphic format, provide an indication of the range of achievement, as measured by standardized tests, in each school. These ranges can be used to indicate the variety of achievement levels in a school and help in planning the instructional program. A school with a wide range has to be prepared to provide a larger variety of instructional programs than a school with a narrow range. These charts also show, on a generalized basis, a comparison of score ranges between schools.

Third, a longitudinal analysis of test scores for each school, similar to the one done countywide, is provided. In this case, the longitudinal group consists of students tested in the same school in both 1976 and 1978. School trends can be compared to that of the county overall, to assess the effect of entering and leaving students on a school's achievement pattern. This information should prove highly useful in assessing the resource requirements of individual schools.

Review of Tests

The report provides analyses of each of the four tests used systemwide in MCPS and contains examples of the types of test questions. Highlights of the reviews are presented below.

Iowa Tests of Basic Skills (ITBS)

The tests in the ITBS provide good norm reference information (comparative ranking of students) about student performance in broad skill areas (e.g., reading comprehension, punctuation, map reading, mathematics problem solving); and are useful for assessing the general level of school and county performance and comparing them with national norms established seven years ago. However, the use of these tests in a diagnostic criterion-referenced manner (student attainment of specific skills) is questionable because (1) there are only one or two questions

measuring many of the objectives; (2) items for different objectives have different levels of difficulty; and (3) many items are not specific to one objective.

Even as a measure of county performance, however, some limitations should be noted. These tests were designed to measure a common curriculum across the nation, not to measure the local Montgomery County curriculum. The determination of content was done in 1970. This means that the match of the test to the present local curriculum will not be as good as a more recently developed local, or national, test. Nonetheless, the ITBS does measure a number of basic skills that are relevant across years and school districts.

Finally, a technical point regarding test score interpretation is of interest. MCPS and the Maryland Accountability Program use spring national norms for the ITBS. The test was actually normed in the fall, and spring norms assessing ITBS performance were determined by mathematical estimation (interpolation and extrapolation) rather than by actual test administration. There is, therefore, some doubt about their accuracy and most test experts caution against using such estimates. In addition, in a recent U. S. Office of Education funded publication written by a nationally recognized authority in testing, the following statement was made regarding the ITBS norms:

"The beginning-of-year norms can be used for norm-referenced evaluation. However, the middle- and end-of-year norms are projections and should not be used."¹

While this recommendation is certainly not to be considered definitive and may be too strong, it should be kept in mind when assessing the value of ITBS scores.

Tests of Academic Progress (TAP)

All of the statements about the ITBS made above apply to the TAP as well; these tests are from the same publisher and were normed in essentially the same manner. The one major difference to be noted is that the TAP is tied more to specific content, than to skills. For example, the social studies section contains questions related to American history, world history, economics, etc. The social studies related sections of the ITBS measure skills such as map reading and locating, and using reference materials. Therefore, it can be argued that scores on this test will be even more closely related than the ITBS to the congruence between test items and present course content.

¹Tallmadge, G. K., and Wood, C. T., "Characteristics of Eight Commonly Used, Nationally Normed Tests." ESEA Title I Evaluation and Reporting System, Technical paper No. 5., October, 1976, p. 10.

Cognitive Abilities Tests (CAT)

The Cognitive Abilities Tests have been used as a measure of innate ability. However, serious questions about the use of the CAT as an indicator of general intelligence or aptitude have been raised as a result of reviewing the tests and some of the validation data presented by the publisher. Several of the tests require skills very similar to, or the same as, those measured by the ITBS. This suggests that the CAT may, to some extent, be just another measure of achievement.

This suggestion is supported by correlational data presented by Houghton-Mifflin, the publisher of the CAT. These data show that correlations between sections of the CAT and the Stanford-Binet Intelligence Scale, a widely recognized, individually administered, intelligence test are generally lower than correlations of the CAT with sections of the ITBS, an achievement test. While these correlational data could have come about for many reasons, including a different question format, they certainly raise questions about what the CAT is measuring.

This, in turn, casts serious doubt on the procedure, which has been used widely in past years, of using CAT scores as a benchmark against which achievement test scores are compared to determine whether an individual child is "working up to his/her ability." Given the problems with the CAT, such comparisons can be held to be unjustified, and possibly very misleading.

Maryland Functional Reading Test (MFRT)

The MFRT was developed to provide a means of insuring that students receiving a Maryland High School diploma have the minimum reading skills needed for functioning in society. This is a part of the competency-based movement that is prevalent in education today. The review of the MFRT illustrates questions raised generally by psychometricians with regard to minimum competency criterion-referenced tests. Two of the most important questions are:

1. How well does the test differentiate between students who have the competency being measured and those who do not?
2. What are the skills needed for minimum competency in a subject area, and how can these be determined?

Extensive work is being done at the state level to answer question 1 for the current MFRT as well as for an alternate form of it and for functional mathematics tests that are being developed. The second question is far more difficult to solve and is currently the subject of both federal and local investigations.

The report also points out specific weaknesses in some of the questions included, which may limit the validity of the scores. Concerns regarding lack of information on reliability and validity are also expressed.

ANNUAL TEST REPORT

1977-78

by

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TABLE OF CONTENTS

Introduction.	1
1. Analysis of County Data.	2
1-A. Historical Record of MCPS Test Results	7
1-B. Analysis of Test Results by Racial/Ethnic Groups	14
1-C. Analysis of Test Results by Sex.	39
1-D. Longitudinal Analysis of Results for Students Tested in 1975-76 and 1977-78	53
1-E. Report on Students Achieving Competency on the Maryland Functional Reading Test Countywide and by Sex and by Racial/Ethnic Category	69
1-F. MCPS Student Performance on College Entrance Examination Board Tests.	77
1-G. Summary of 1977-78 MCPS Test Results	85
2. Analysis of School Data.	87
2-A. Mean Test Scores by School	90
2-B. School Interquartile Ranges.	272
2-C. Longitudinal Test Results by School.	328
3. Reviews of Major Standardized Tests Used in the Montgomery County Public Schools.	341
3-A. Iowa Tests of Basic Skills	343
3-B. Tests of Academic Progress	355
3-C. Cognitive Abilities Tests.	362
3-D. Maryland Functional Reading Test	377
3-E. Summary of Test Reviews.	385
4. Technical Testing Terms.	389

INTRODUCTION TO ANNUAL TEST REPORT

For several years the Montgomery County Public Schools (MCPS) have presented an annual test report of the performance of MCPS students in certain grades on a standard set of tests. This year the report has been greatly expanded in order to meet staff needs and to respond to the growing demand from the public for accountability of the schools. The 1977-78 report is, therefore, a technical source document which includes four chapters.¹

- Chapter 1: Analyses of County Data
- Chapter 2: Analyses of School Data
- Chapter 3: Reviews of the Major Standardized Tests Used in MCPS
- Chapter 4: Technical Testing Terms (Glossary)

Chapter 1 contains the countywide test data and detailed discussion of the data presented in each table. This reporting of results is in far more detail than in previous years and includes analyses by sex and racial/ethnic groups. Another addition to the data reports is an analysis of longitudinal data for students who have been in MCPS for two test administrations: 1975-76 and 1977-78. This provides information on how the MCPS instructional program is meeting the needs of students who have not attended schools in another system for these two years.

Chapter 2 contains the school test results. Included are school mean scores and graphs showing the scores of students at the first and third quartiles for each school year. This makes it possible to determine the diversity of test performance within a school. Longitudinal data are presented for students who were in the same school for the 1975-76 and 1977-78 testings.

Chapter 3 provides a detailed discussion of the four major test batteries used in the countywide testing program. Tests are described, and examples of the types of questions asked on each test are given. How the tests should and should not be used is discussed.

Chapter 4 is a glossary of statistical and testing terms which are used throughout the report. Each term is defined, and there is a discussion of how the term can be used appropriately. There is also a discussion of common misuses or misinterpretations of the term.

¹

A less technical version of the report will also be made available.

CHAPTER 1
ANALYSES OF COUNTY DATA

INTRODUCTION TO COUNTY DATA ANALYSIS

This chapter contains the data from systemwide standardized testing in MCPS. Data from the administration of the following tests will be presented and analyzed in various ways:

Iowa Tests of Basic Skills (ITBS): Grades 3, 5, 7, 9
Tests of Academic Progress (TAP): Grade 11
Cognitive Abilities Tests (CAT): Grades 3, 5, 7, 9, 11
Maryland Functional Reading Tests (MFRT): Grades 7, 9, 11
College Board Scholastic Aptitude Tests (SAT)
College Board Achievement Tests (CEEB)
College Board Advanced Placement Exams (APE)

The analyses are presented in six sections. They are listed below with the initials of the tests discussed in each section.

- A. Historical Record of MCPS Test Results (ITBS, TAP, CAT)
- B. Analysis of Test Results by Racial/Ethnic Groups (ITBS, TAP, CAT)
- C. Analysis of Test Results by Sex (ITBS, TAP, CAT)
- D. Longitudinal Analysis of Results for Students Tested in 1975-76 and 1977-78 (ITBS, CAT)
- E. Report of Students Achieving Competency on the Maryland Functional Reading Test Countywide and by Sex and Racial/Ethnic Category
- F. MCPS Student Performance on College Entrance Examination Board Tests (SAT, CEEB, APE)
- G. Summary of County Test Results

Each section is divided into the following parts:

Rationale
Data
Analysis
Cautions in Data Interpretation (when applicable)
Results
Findings Requiring Future Study (where appropriate)

Many of the technical terms used in this chapter are defined in detail in Chapter 4.

Cautions to be Observed in Interpreting Data

The data presented in this chapter are essentially descriptive. They show the performance of different groups of Montgomery County Public School students on a particular set of tests. Groups are defined by year of testing, grade level, sex, and racial/ethnic classification. Using the tables in the report, it is possible to compare mean scores between years, across grades, and among groups. It is also possible to observe patterns or trends in scores. Since the data are descriptive, such comparisons and observations are also descriptive. However, descriptive data must be interpreted if they are to serve their purpose.

Interpreting statistical data is always difficult even under the most carefully controlled conditions. It is particularly difficult when actual or statistical control cannot be exercised over the many variables that influence results, which are the conditions that prevail in a countywide testing program.² Therefore, caution must always be observed when basing inferences upon descriptive data of the kind presented here. In this section, general problems of interpretation are discussed. A few additional problems are identified in the specific sections to which they pertain.

Differences in Group Membership

Different individuals are tested each year at each grade level. Therefore, groups and subgroups differ from year to year and from grade to grade. Differences in mean scores may occur simply because the groups or categories of students whose performance is being compared are composed of different individuals who vary in many ways. This must be borne in mind when one speaks of "improvements" or "declines" in all of the analyses included in this chapter. This caveat does not apply to the longitudinal groups in Section 1-D. Their scores are based on data derived from the same students over two testing periods.

Fluctuations of Means of Small Groups

Some analyses involve the description and comparison of the mean scores obtained by rather small groups of students. It is to be expected that these small-group means will probably deviate from state or county averages or will differ from one another more than the means of large groups. This sampling fluctuation must be taken into account when comparing mean scores between years, across grades, or among groups.

Differences in Tests and Norms

The Cognitive Abilities Test, Iowa Tests of Basic Skills, and Tests of Academic Progress have the same or similar names at each grade level. However, the actual items making up the test batteries are different. The test administered at Grade 3 is, therefore, not the same as the test administered at Grade 5 (and so on for other grades or test "levels"). The national norming sample at each grade may have differed in ability. Therefore, the national percentile ranks of a particular test battery may not have precisely the same meaning from level to level across grades. (This is discussed in more detail in Chapter 4.) Since the Tests of Academic Progress, which are administered in Grade 11, are completely different from the Iowa Tests of Basic Skills, comparisons should not be made between scores on the two batteries even on tests which have similar names.

There are two forms of the Maryland Functional Reading Test: Form A is administered in Grade 7, and Form B is administered in Grades 9 and 11. Objective categories are the same from form to form, but the reading materials and test items are different. Therefore, the competency score (80%) which applies to both forms probably does not require the same level of skills across forms.

2

Some, but by no means all, of the uncontrolled variables are socio-economic status, length of residence in the county, years of attendance in county schools, rate of attendance, attrition, mobility, placement in special classes or programs, etc.

Percentile Ranks and Grade Equivalent Scores

Percentile rank (PR) and grade equivalent (GE) scales are not consistent, equal-interval numerical scales (see Chapter 4). A given raw score or raw-score difference does not have the same meaning throughout the entire range of the PR or GE scales. In some segments, a small difference in raw scores can result in a small difference in PR or GE. In other segments of the scales, the same raw-score difference may result in somewhat larger differences in PR or GE. Thus, PR's and GE's can magnify small differences in raw-score units and overemphasize the apparent importance of these differences, particularly when they are statistically significant (see following discussion).

Because the scales are not consistent, GE's and particularly PR's should not be subtracted in an attempt to find between-year, between-grade, or between-group differences in amounts of "improvement" or "decline."³ They should also not be subtracted to identify subject or curriculum areas in which "greater" or "smaller" changes have occurred.

Meaning of Reported Percentile Ranks

The PR corresponding to the mean score of any group on any given test is the PR of an individual student who obtains that score. For example, if the Grade 3 county mean on the ITBS Reading test were a GE of 4.5, the norms conversion table would show that an individual student obtaining a GE of 4.5 would have a PR of 71 (see Chapter 4 for meaning of PR). This PR of 71 would be reported as corresponding to the Grade 3 mean GE. The same principle applies to all reported PR's corresponding to mean scores.

The PR corresponding to the median score of any group on any test was determined in the same way. It is the PR of an individual student who obtains that score. In this case, the reported PR is also the median PR of the group on the particular test.

Statistical Significance

The statistical significance of differences in mean scores is frequently reported when between-year or between-group comparisons are made. It should be clearly understood that a test of statistical significance is not a test of the importance or meaningfulness of a difference in performance means. Furthermore, such a test does not control or account for differences between groups which might be responsible for the difference in performance (see previous discussion). The test of statistical significance of difference in means which was applied to the reported data accounts for testing error. Therefore, when a given difference is said to be statistically significant, it means only that there is a very low probability (though still some probability) that the difference was caused by testing error.

3

They should not be added, subtracted, multiplied, or divided. The common error is subtracting to try to find relative "gains," etc. Another common error, however, is attempting to find "averages," especially without the use of norms tables.

The statistical significance or non-significance of a difference in mean scores is, in part, a function of the number of scores (e.g., students in the sample). When a significance test is based on large samples, as is true in many of the analyses, a very slight difference in means can turn out to be statistically significant even though it is not meaningful or educationally important. For small samples, the same slight difference might turn out to be statistically non-significant. In fact, to be statistically significant, the magnitude of a difference in means of small samples may sometimes have to be many times greater than a difference based on large samples.

Some of the reported statistically significant differences in mean scores are so small that there is no apparent difference in the means appearing in the tables. Essentially, this results from rounding numbers to the level of precision conventionally used by the publisher of the tests or to the practical reporting level.

Effect of Normal Curve Equivalent Scores on Results

Some of the reported results differ slightly from those previously reported for 1975-76 and 1976-77, because normal curve equivalents (NCE) have been used for the first time to compute group mean scores. This was done to put all test results on the same scale and to make it possible to perform tests of statistical significance. Significance tests were based on NCE differences. For purposes of reporting, results were then transformed to the conventional and more easily understood standard age scores, grade equivalent scores, standard scores, and percentile ranks. Again, rounding of numbers has also contributed to differences between present results and those reported previously.

1-A. HISTORICAL RECORD OF MCPS TEST RESULTS

Rationale, Data, and Data Analysis

Rationale

A review of the average scores of MCPS students in recent years on the Iowa Tests of Basic Skills (ITBS), Tests of Academic Progress (TAP), and the Cognitive Abilities Test (CAT) can provide the general direction of achievement in MCPS. In addition, it can indicate possible program improvements or declines in various curricular areas. For example, if the score pattern for one or two of the eleven tests in the ITBS battery declines over the year while the scores on remaining tests stay the same or increase, it could signal that there is some problem in the declining areas.

Data

Tables 1-A-1 and 1-A-2 show the summary test results for all students tested each year for as long as the currently-used test forms have been administered at the same time of the year. The data for Grades 3 and 5 go back to 1972. For Grades 7, 9, and 11, the data go back to 1974. The values reported are the national percentile rank for a student with the MCPS median scores (Table 1-A-1) and mean scores (Table 1-A-2). The medians are presented in order to be consistent with the data that have been reported for several years. The means were computed using grade equivalent scores to be consistent with the way results are reported to schools and in the Maryland Accountability Program report. This provides a point of reference for the individual schools to use in judging their results. Table 1-A-3 summarizes the results of Table 1-A-1.

Analysis

What is meaningful in the data is the trend in scores across the years. The scores are therefore compared to determine whether they are increasing or decreasing at each grade level. No formal statistical analysis was performed.

Cautions in Data Interpretation

When differences across grades are studied, the problem of different norming samples at different grade levels must be considered (see chapter introduction). It is possible, for example, that the students in the fifth-grade norming sample were brighter than those in the third-grade sample. If that were true, a small decline in the percentile rank of the MCPS mean from the 1976 third grade to the 1978 fifth grade could actually represent no decline in performance because the MCPS fifth grade would be compared to a higher standard.

Results

Table 1-A-1 shows that in 1977-78 on 52 (83%) of 63 tests the national percentile ranks of the student with the MCPS median scores were at their highest since the currently used tests have been administered. However, it

should be noted that the scores of five tests (8%) have not changed in five years and are thus both all-time highs and all-time lows. Four of the five achievement composite scores (80%) were at their highest point. Seventeen (22%) of the 63 test scores were at an all-time low.

When the 1977-78 scores are compared to the previous year's results, 14 (22%) of the test scores increased, 45 (71%) stayed the same, and four (6%) decreased. The results for each grade and type of test are summarized in Table 1-A-3. The table shows the numbers that increased, decreased, and stayed the same from 1976-77 and the numbers which are at high and low points. With the great majority of the scores remaining stable or improving and with most at an all-time high, no curricular areas stand out as needing special emphasis.

The most encouraging results were in the elementary grades where percentile ranks were highest. Score levels tended to decline as grade level increased. Grade 11 had the poorest results, with scores remaining at all-time lows. The trend of declining scores from Grade 3 to Grade 9 has been generally true since 1974. While scores do rise a little in Grade 11, it must be remembered that a completely different test is used in that grade, making comparisons questionable.

On all tests in all years, scores have been above the national average. In 1977-78, Grade 3 scores were especially high, with the ITBS Composite at the 79th percentile. Thus 50 percent of the MCPS third-grade students scored higher than 79 percent of the students in the norming sample.

The results for means are not discussed here because they are almost exactly the same as for medians. This is to be expected since both statistics represent ways of determining the typical score, and in a large group their trends are usually very similar. Also to be expected is the fact that the mean is lower than the median for virtually every score reported. This is because the typical MCPS student is above the national average, which is a percentile rank of 50.

Findings Requiring Additional Study

The relatively poorer performance by secondary students could be caused by several factors. One possible explanation is the difference in test norming samples discussed in the data-interpretation section and in the chapter introduction. Another explanation could be that there is more instructional emphasis on the basic skills measured by the ITBS in the elementary grades. It is possible that the curriculum becomes more diverse at the secondary level to meet the expanding needs and interests of older students.

Still another cause of this decline could be poor motivation on the part of older students. A better indication of the success of the MCPS secondary instructional program might be gotten from the results of College Board tests in Section F.

TABLE 1-A-1

HISTORICAL RECORD OF MCPS TEST RESULTS
(National Percentile Rank of Student With MCPS Median)

Grade	Year	Cognitive Abilities Test			Iowa Tests of Basic Skills										Prob. Solv.	Comp.
		Verb.	Quant.	Nonv.	Voc.	Rdg.	Spell.	Capt.	Punc.	Usage	Map Rdg.	Graphs	Ref. Mat.	Arith. Conc.		
3	72	71	77	67	69	63	72	73	75	70	70	68	61	66	62	73
	73	69	77	67	69	63	74	73	75	68	64	68	57	66	62	71
	74	69	77	73	62	63	72	73	71	68	64	68	57	66	62	71
	75	71	79	73	69	66	74	75	81	70	70	68	65	66	70	73
	76	75	83	75	69	68	78	79	78	70	76	76	65	69	70	76
	77	75	81	77	72	71	78	82	81	74	76	76	72	69	79	79
	78	79	83	77	72	71	79	82	83	74	76	83	76	69	79	79
5	72	71	71	69	65	62	65	64	65	69	63	65	64	67	59	70
	73	69	69	69	65	60	62	64	61	65	58	65	64	67	59	67
	74	69	71	73	62	60	62	61	61	65	63	65	64	65	59	64
	75	69	71	73	62	60	62	64	61	65	63	69	66	65	59	67
	76	71	73	77	62	60	65	69	61	65	63	69	66	67	65	70
	77	73	75	77	65	62	65	72	68	69	68	76	66	72	65	70
	78	75	75	81	65	62	67	72	68	69	73	76	68	72	65	72
7	74	67	67	71	58	56	54	57	53	61	60	62	60	60	56	60
	75	65	67	71	58	54	54	60	53	57	60	62	60	60	56	60
	76	67	69	75	60	54	54	64	62	61	64	62	60	64	56	62
	77	67	69	75	58	54	58	64	62	61	64	62	60	64	56	62
	78	67	69	75	60	54	58	64	62	61	64	62	60	64	56	62
9	74	69	75	73	61	58	54	58	59	59	68	59	61	58	55	62
	75	67	73	73	57	56	54	58	59	59	63	54	60	58	50	62
	76	69	75	77	57	55	52	62	59	59	63	54	60	58	55	62
	77	69	77	77	57	55	54	62	62	59	63	59	61	61	55	62
	78	69	75	77	61	55	54	62	62	59	68	59	60	58	55	62

TABLE 1-A-1

HISTORICAL RECORD OF MCPS TEST RESULTS

(National Percentile Rank of Student With MCPS Median)

		Cognitive Abilities Test			Tests of Academic Progress						
Grade	Year	Verb.	Nonv.	Quant.	Soc. Std.	English	Science	Reading	Math.	Lit.	Comp.
11	74	73	77	-	64	62	69	64	71	57	67
	75	71	77	-	61	58	69	64	71	57	67
	76	73	81	-	58	58	64	60	71	57	67
	77	71	75	-	58	58	64	60	69	57	63
	78	71	-	75	54	58	64	60	69	57	63

TABLE 1-A-2

HISTORICAL RECORD OF MCPS TEST RESULTS

(National Percentile Rank of Student With MCPS Mean)

Grade	Year	Cognitive Abilities Test			Iowa Tests of Basic Skills										Ref. Mat.	Arith. Conc.	Arith. Solv.	Comp.
		Verb.	Quant.	Nonv.	Voc.	Rdg.	Spell.	Capt.	Punc.	Usage	Map		Graphs					
											Rdg.							
3	72	65	73	67	62	60	68	68	71	64	67	65	61	63	62	71		
	73	69	73	67	62	60	68	66	69	62	64	65	61	63	62	68		
	74	67	73	69	62	60	68	66	69	60	64	65	57	59	62	68		
	75	69	75	71	62	63	70	71	75	64	67	68	65	63	66	74		
	76	73	81	73	65	64	70	73	71	66	70	71	67	66	70	71		
	77	75	81	73	69	68	72	75	75	68	73	74	69	69	75	73		
	78	77	81	75	69	68	74	77	77	68	73	76	72	69	75	76		
5	72	67	67	65	62	60	60	61	61	62	63	62	61	67	59	64		
	73	69	67	67	60	57	60	59	61	60	61	62	59	67	59	64		
	74	69	67	71	60	57	58	59	58	58	63	65	59	65	59	62		
	75	69	69	73	60	57	60	61	59	60	66	65	61	65	64	64		
	76	71	73	75	60	60	62	62	59	60	63	67	63	67	62	64		
	77	73	75	75	62	60	62	66	63	63	68	69	64	70	61	67		
	78	75	75	77	62	62	64	67	65	63	66	72	66	72	65	70		
7	74	67	67	69	54	54	51	54	51	53	59	58	56	60	52	58		
	75	65	67	71	54	52	51	56	51	53	59	56	56	60	52	58		
	76	67	73	73	54	52	51	57	54	54	60	56	56	60	52	58		
	77	67	71	73	54	52	53	59	56	55	60	58	58	62	52	58		
	78	67	71	73	56	52	53	59	56	55	60	58	58	62	54	61		
9	74	69	73	73	57	53	49	53	50	52	61	54	55	55	51	58		
	75	67	71	73	55	51	49	53	51	52	59	52	55	53	50	56		
	76	69	75	77	55	51	48	53	51	53	59	54	53	53	51	56		
	77	69	75	77	55	51	49	54	53	53	59	54	55	55	51	56		
	78	69	75	79	57	51	49	56	54	53	61	54	55	53	51	58		

TABLE 1-A-2

HISTORICAL RECORD OF MCPS TEST RESULTS

(National Percentile Rank of Student With MCPS Mean)

		Cognitive Abilities Test			Tests of Academic Progress						
Grade	Year	Verb.	Nonv.	Quant.	Social Studies	English	Science	Reading	Math.	Literature	Composite
11	74	73	77	-	64	58	69	64	71	57	67
	75	71	77	-	61	58	69	64	71	61	67
	76	73	81	-	58	58	64	60	69	57	63
	77	71	73	-	58	58	64	60	69	57	63
	78	71	-	75	54	58	64	60	69	57	63

TABLE 1-A-3
SUMMARY OF RESULTS OF TABLE 1-A-1

	<u>CAT</u>	<u>ITBS/TAP</u>	<u>COMPOSITE</u>
Grade 3	2 increased* 1 same 3 at 7 year high	4 increased 7 same 11 at 7 year high	same at 7 year high
Grade 5	2 increased 1 same 3 at 7 year high	3 increased 8 same 11 at 7 year high	increased at 7 year high
Grade 7	3 same 3 at 5 year high	1 increased 10 same 10 at 5 year high 4 at 5 year lows (3 are unchanged for 5 years)	same at 5 year high
Grade 9	2 same 1 decreased 2 at 5 year high	2 increased 7 same 2 decreased 8 at 5 year high 4 at 5 year low (1 unchanged for 5 years)	same same for 5 years
Grade 11	1 same	5 same 1 decreased 1 at 5 year high 6 at 5 year low (1 is unchanged for 5 years)	same at 5 year low

*Increased=Score was higher in 1978 than 1977

Same=Score was same in 1978 as in 1977

Decreased=Score was lower in 1978 than 1977

1-B. ANALYSIS OF TEST RESULTS BY RACIAL/ETHNIC GROUPS

Rationale, Data, and Data Analysis

Rationale

In the spring of 1978, MCPS released results of the 1976-77 testing program which showed a gap in performance between Black students and White students at all grade levels. This caused considerable concern among administrators, teachers, and parents. In response, the superintendent of schools identified educational equity as a priority objective for the next five years. One indication of the degree to which MCPS is meeting this objective is obtained from an examination of the performance of various racial groups in the system (White, Black, Asian, and Hispanic) on the Iowa Tests of Basic Skills (ITBS), the Tests of Academic Progress (TAP), and the Cognitive Abilities Test (CAT). The analysis will provide answers to two questions:

1. Have the test scores within each group of students increased or decreased from 1976-77 to 1977-78?
2. Have the differences in test performance between racial/ethnic groups noted in the 1976-77 data become smaller or larger in 1977-78?

Data

Tables 1-B-1, 1-B-2, and 1-B-3 summarize the comparison of White student performance with that of the other three racial/ethnic groups. These tables indicate the number of tests on which the differences between White students and each of these groups have narrowed or widened (CAT and ITBS for Grades 3, 5, 7, and 9; CAT and TAP for Grade 11). The changes were determined by comparing the normal curve equivalent (NCE) mean scores for each group. These scores have been converted to the more easily interpretable standard age scores, grade equivalent scores, and standard scores; and are reported for the various grade levels and racial/ethnic groups in Tables 1-B-4 through 1-B-15. The percentages of students tested in each group in 1977 and 1978 are presented in Tables 1-B-16 through 1-B-19.

Tables 1-B-20 and 1-B-21 show the stanine distribution for each racial/ethnic group on the CAT Verbal test and the ITBS Composite test. This makes it possible to see how entire groups--not just the average students--are doing.

Analysis

Within each group the statistical significance of the difference between 1976-77 mean scores and 1977-78 mean scores is determined by t-tests in which the standard error of measurement is used to compute the denominator (see chapter introduction for explanation). The results of these significance tests are used to answer Question 1. Question 2 is answered by comparing the magnitude of change for each group each year.

Cautions in Data Interpretation

Cautions in interpreting these data have already been discussed in the chapter introduction. No additional cautions need to be observed in this section.

Results

Individual Group Analysis (Question 1)

Tables 1-B-4 through 1-B-15 present test scores for each population group tested. Analyses of the test scores for each group show that when 1976-77 and 1977-78 data were compared, statistically significant gains were found for Blacks and Whites on both ITBS and CAT tests. The changes in performance of Hispanic and Asian students, although encouraging and statistically significant, were far more limited in number. For all groups, gains and losses were generally small in absolute magnitude.

White students showed statistically significant gains on 44 percent of the achievement tests and 46 percent of the CAT tests. Significant losses were found in 18 percent of the achievement tests and 23 percent of the CAT tests. Performance of the White students in the 1978 testing was well above the national norm for all students on all tests.

Black students showed statistically significant gains on 68 percent of the achievement tests and 77 percent of the CAT tests. No significant losses were found on the achievement tests, but significant losses were found on 8 percent of the CAT tests. Performance of the Black students in the 1978 testing was slightly below the national average for all students on most of the ITBS and CAT tests but was well above the scores reported for Black student populations in most other school districts.

Asian students showed statistically significant gains on 8 percent of the achievement tests and 8 percent of the CAT tests. Significant losses were found in 12 percent of the ITBS tests and 15 percent of the CAT. The majority of these losses were in Grade 7. Performance of the Asian students in the 1978 testing was far above the national norm for all students on all tests.

Hispanic students showed statistically significant gains on 6 percent of the achievement tests and 28 percent of the CAT tests. Significant losses were found on 14 percent of the achievement tests and 23 percent of the CAT tests. Performance of the Hispanic students in the 1978 testing clustered around the national norm but was well above the scores reported for Hispanic student populations in most other school districts. The significant losses for Hispanics were found at the third and fifth grade levels only. This finding is interesting in light of the fact that a larger proportion of enrolled Hispanic students were tested at these grade levels in 1978 than in 1977 (Table 1-A-14). The combined increase in percent of students tested and the decrease in test scores raises some serious questions regarding the comparability of populations tested across the two years. Whether or not population differences account for the apparently increased gap requires further consideration.

It should also be noted that Hispanic students consistently showed their highest performance on the Nonverbal test of the CAT. The discrepancy in scores between the Verbal and Nonverbal tests raises the question of whether or not the ITBS and portions of the CAT were inappropriate for some Hispanic students because of linguistic demands. That is, the pattern of scores suggests that test scores for Hispanics may have been depressed because of linguistic factors.

Majority/Minority Comparisons (Question 2)

Tables 1-B-1 through 1-B-3 summarize the comparison of majority/minority group performance across the two test years. Overall, the analyses show that there were gaps between the performance of White students and Black, Hispanic and Asian students on all tests in both 1976-77 and 1977-78. However, between 1976-77 and 1977-78, most of the gaps have narrowed by a small but statistically significant amount. The only exception is between the scores of White students and Hispanic students, where many of the gaps have widened.

Table 1-B-1 shows that the gap between Black and White test performance in 1977-78 is still substantial but has narrowed slightly from the 1976-77 data. The strongest declines in the gap are found in Grades 5 and 11. Only in Grade 9 did the gap increase on more than one test. The situation in Grade 11 was especially noteworthy, as the Blacks improved on all tests and the Whites declined on all. Tables 1-B-16 and 1-B-17 present the number and percent of Black and White students tested by grade level for each test period. For both groups, the number and percent of students tested is quite similar across the two years.

Table 1-B-2 shows a gap in the performance of Asian and White students by grade level across the two years favoring the Asian students in 1976-77. This gap decreased in Grades 5 and 7 in 1977-78, stayed about the same in Grades 3 and 9, and increased in Grade 11. The pattern, however, is complex; and on some tests, especially those involving verbal skills, White students scored higher. Table 1-B-18 presents the number and percent of Asian students tested at each grade level for each test period. These data show a slight increase in number and percent of students tested at each grade level.

Table 1-B-3, which gives Hispanic/White comparisons, shows a substantial gap between Hispanic and White students by grade level across the two years. This gap favored the White students in 1977 and tended to increase in Grades 3, 5, and 9 in 1978. In the elementary grades, an increase was found on all scores except the CAT Quantitative in Grade 5. Table 1-B-19 presents the number and percent of Hispanic students tested at each grade level for each test period. A large increase in percent of enrolled students tested is noted for Grades 3 and 5 in 1977-78 as compared to 1976-77.

White students' outscoring Hispanics and Blacks is consistent with results reported by the National Assessment of Educational Progress (NAEP).⁴ The NAEP results are reported on a different score scale: the percent of correct responses. Generally, the Blacks and Hispanics averaged between 10 and 20 percent lower on these tests in the areas of social studies, science, mathematics, and reading.

⁴ Hispanic Student Achievement in Five Learning Areas: 1971-75, 1977,
National Assessment of Educational Progress, Denver, Colorado.

While there were definite differences in the performance of the four groups involved here, each group had students scoring across the full test-score distribution, indicating that there are students of very high and low achievement in all groups. The stanine distributions in Tables 1-B-20 and 1-B-21 for the CAT Verbal and ITBS Composite demonstrate this point.

Findings Requiring Further Study

The possible effect of linguistic difficulties on the test performance of the Hispanic students should be studied in order to be able to come to better conclusions about the results obtained from that group.

TABLE 1-B-1

COMPARISONS OF WHITE/BLACK TEST SCORES

Grades	ITBS Composite Analysis	Subtest Analysis			
		Tests	Number of Subtests	White Children Scored Higher--Gap Closing Compared to Last Year	White Children Scored Higher--Gap Widening Compared to Last Year
3	White children scored higher, gap closing	CAT ITBS	3 11	13	1
5	White children scored higher, gap closing	CAT ITBS	3 11	14	
7	White children scored higher, gap closing	CAT ITBS	3 11	13	1
9	White children scored higher, gap closing	CAT ITBS	3 11	9	5
11	White children scored higher, gap closing	CAT TAP	1 6	7	

TABLE 1-B-2
COMPARISONS OF WHITE/ASIAN TEST SCORES

Grade	ITBS Composite Analysis	Subtest Analysis*					
		Number of Tests Subtests		White Children Scored Higher--Gap Closing Compared to Last Year	White Children Scored Higher--Gap Widening Compared to Last Year	Asian Children Scored Higher--Gap Closing Compared to Last Year	Asian Children Scored Higher--Gap Widening Compared to Last Year
3	Asian children scored higher, gap widening	CAT ITBS	3 11	2		6	4
5	Asian children scored higher, gap closing	CAT ITBS	3 11		2	12	
7	Asian children scored higher, gap closing*	CAT ITBS	3 11			12	1
9	Asian children scored higher, gap closing	CAT ITBS	3 11			6	7
11	Asian children scored higher, gap widening	CAT TAP	1 6	3			3

*All of the subtests will not be accounted for in these columns because the group scoring higher changed. These changes are as follows:
Three subtests, 2 in Grade 3 and 1 in Grade 11, had white children scoring higher in 1977 and lower in 1978.
Two subtests, 1 in Grade 7 and 1 in Grade 9, had Asian children scoring higher in 1977 and lower in 1978.

TABLE 1-B-3

COMPARISONS OF WHITE/HISPANIC TEST SCORES

Grades	ITBS Composite Analysis	Subtest Analysis			
		Tests	Number of Subtests	White Children Scored Higher--Gap Closing Compared to Last Year	White Children Scored Higher--Gap Widening Compared to Last Year
3	White children scored higher, gap widening	CAT ITBS	3 11		14
5	White children scored higher, gap widening	CAT ITBS	3 11	1	13
7	White children scored higher, gap closing	CAT ITBS	3 11	12	2
9	White children scored higher, gap widening	CAT ITBS	3 11	4	10
11	White children scored higher, gap widening	CAT TAP	1 6	5	2

TABLE 1-B-4
COMPARISON OF TEST SCORES FOR 1977 and 1978--BLACK
(Scores reported are the standard age score (SAS), national percentile rank (PR), and grade equivalent (GE) of the student with the mean score¹)

Tests	Grade 3			Grade 5		
	1977 (n = 749) ²	1978 (N = 751)	Sig. of Diff. ³	1977 (N = 758)	1978 (N = 779)	Sig of Diff.
Cognitive Abilities Test	<u>SAS</u> <u>PR</u>	<u>SAS</u> <u>PR</u>		<u>SAS</u> <u>PR</u>	<u>SAS</u> <u>PR</u>	
Verbal	100.0 50	101.0 52	++	96.7 42	99.5 49	++
Quantitative	101.0 52	101.7 54	++	96.3 41	98.3 46	++
Nonverbal	99.0 48	100.0 50	++	99.5 49	101.0 52	++
Iowa Tests of Basic Skills	<u>GE</u> <u>PR</u>	<u>GE</u> <u>PR</u>		<u>GE</u> <u>PR</u>	<u>GE</u> <u>PR</u>	
Vocabulary	3.5 44	3.6 46		4.9 30	5.1 36	++
Reading Comprehension	3.4 40	3.5 43	++	4.8 28	5.0 33	++
Spelling	4.0 56	4.2 61	++	5.2 38	5.5 45	++
Capitalization	3.9 54	4.1 60	++	5.2 39	5.4 43	++
Punctuation	3.7 50	3.9 55	++	5.0 35	5.2 39	++
Language Usage	3.5 45	3.7 49	++	4.9 35	5.1 39	++
Map Reading	3.5 42	3.6 44		5.2 35	5.3 38	++
Graphs and Tables	3.7 48	3.7 50		5.3 39	5.4 42	+
Reference Materials	3.5 43	3.6 47	++	5.2 35	5.4 41	++
Mathematics Concepts	3.5 42	3.5 43		5.1 35	5.3 39	++
Mathematics Problem Solving	3.6 46	3.6 46		5.0 32	5.2 36	++
Composite	3.5 44	3.6 48	++	4.9 29	5.1 35	++

1. Mean is computed using Normal Curve Equivalent (NCE) scores for all scores.
2. This is the number of students tested on ITBS Composite. The number for each subtest may be slightly higher.
3. Levels of statistical significance are based on the Standard Error of Measurement using differences in Normal Curve Equivalent scores. The levels are indicated by the following symbols. A blank means there was not a significant difference.
 - ++ Highly significant improvement, probability less than .001
 - + Significant improvement, probability less than .01
 - Significant decline, probability less than .01
 - Highly significant decline, probability less than .001

TABLE 1-B-5
COMPARISON OF TEST SCORES FOR 1977 and 1978-- BLACK

(Scores reported are the standard age score (SAS), national percentile rank (PR), and grade equivalent (GE) of the student with the mean score¹)

Tests	Grade 7			Grade 9		
	1977 (N= 815) ²	1978 (N= 762)	Sig. of Diff. ³	1977 (N= 722)	1978 (N= 732)	Sig. of Diff.
Cognitive Abilities Test	<u>SAS</u> <u>PR</u>	<u>SAS</u> <u>PR</u>		<u>SAS</u> <u>PR</u>	<u>SAS</u> <u>PR</u>	
Verbal	92.0 31	94.3 36	++	93.5 34	93.5 34	
Quantitative	92.5 32	94.7 37	++	96.0 40	95.0 38	
Nonverbal	96.7 42	98.7 47	++	98.7 47	98.7 47	
Iowa Tests of Basic Skills	<u>GE</u> <u>PR</u>	<u>GE</u> <u>PR</u>		<u>GE</u> <u>PR</u>	<u>GE</u> <u>PR</u>	
Vocabulary	6.3 25	6.5 28	++	8.1 27	8.1 27	
Reading Comprehension	6.1 22	6.3 25	++	7.6 24	7.7 25	
Spelling	6.4 31	6.5 32		7.9 31	7.9 31	
Capitalization	6.4 31	6.6 34	++	7.9 30	8.0 31	
Punctuation	6.3 29	6.5 32	++	7.8 29	8.1 33	++
Language Usage	6.1 28	6.3 30	++	7.8 30	7.7 29	
Map Reading	6.5 29	6.7 32	++	7.8 28	7.8 28	
Graphs and Tables	6.4 27	6.5 29	+	8.1 29	8.1 29	
Reference Materials	6.5 28	6.7 32	++	7.9 27	8.0 28	
Mathematics Concepts	6.5 25	6.7 28	++	7.8 24	7.7 23	
Mathematics Problem Solving	6.3 24	6.5 27	+	7.4 22	7.7 25	++
Composite	6.2 22	6.4 26	++	7.7 24	7.7 24	

1. Mean is computed using Normal Curve Equivalent (NCE) scores for all scores.
2. This is the number of students tested on ITBS Composite. The number for each subtest may be slightly higher.
3. Levels of statistical significance are based on the Standard Error of Measurement using differences in Normal Curve Equivalent scores. The levels are indicated by the following symbols. A blank means there was not a significant difference.
 - ++ Highly significant improvement, probability less than .001
 - + Significant improvement, probability less than .01
 - Significant decline, probability less than .01
 - Highly significant decline, probability less than .001

TABLE 1-B-6
COMPARISON OF TEST SCORES FOR 1977 AND 1978--BLACK

(Scores reported are the standard age score (SAS), national percentile rank (PR), and standard score (SS) of the student with the mean score¹)

Tests	Grade 11		
	1977 (N= 585) ²	1978 (N= 613)	Sig. of Diff. ³
Cognitive Abilities Test	<u>SAS</u> <u>PR</u>	<u>SAS</u> <u>PR</u>	
Verbal	94.0 35	94.7 37	++
Quantitative	Not Tested	96.0 40	
Nonverbal	95.0 38	Not Tested	
Tests of Academic Progress	<u>SS</u> <u>PR</u>	<u>SS</u> <u>PR</u>	
Social Studies	43 22	44 24	+
Composition	45 27	46 30	++
Science	45 30	46 35	++
Reading	44 26	44 27	+
Mathematics	45 30	45 30	
Literature	45 28	46 30	+
Composite	44 25	45 27	++

1. Mean is computed using Normal Curve Equivalent (NCE) scores for all scores.
2. This is the number of students tested on ITBS Composite. The number for each subtest may be slightly higher.
3. Levels of statistical significance are based on the Standard Error of Measurement using differences in Normal Curve Equivalent scores. The levels are indicated by the following symbols. A blank means there was not a significant difference.
 - ++ Highly significant improvement, probability less than .001
 - + Significant improvement, probability less than .01
 - Significant decline, probability less than .01
 - Highly significant decline, probability less than .001

TABLE 1-B-7
COMPARISON OF TEST SCORES FOR 1977 and 1978-- WHITE

(Scores reported are the standard age score (SAS), national percentile rank (PR), and grade equivalent (GE) of the student with the mean score¹)

Tests	Grade 3			Grade 5		
	1977 (N=6184) ²	1978 (N=6374)	Sig. of Diff. ³	1977 (N=6568)	1978 (N=6261)	Sig. of Diff.
Cognitive Abilities Test	<u>SAS</u> <u>PR</u>	<u>SAS</u> <u>PR</u>		<u>SAS</u> <u>PR</u>	<u>SAS</u> <u>PR</u>	
Verbal	113.0 79	113.0 79	++	111.5 76	112.5 78	++
Quantitative	114.5 82	115.0 83	++	111.5 76	112.5 78	++
Nonverbal	111.5 76	112.0 77	++	112.5 78	113.5 80	++
Iowa Tests of Basic Skills	<u>GE</u> <u>PR</u>	<u>GE</u> <u>PR</u>		<u>GE</u> <u>PR</u>	<u>GE</u> <u>PR</u>	
Vocabulary	4.4 73	4.4 73	++	6.4 67	6.4 68	
Reading Comprehension	4.5 70	4.5 71		6.3 63	6.4 66	++
Spelling	4.8 73	4.8 74	++	6.4 63	6.6 66	++
Capitalization	5.0 79	5.1 80	++	6.8 69	6.9 70	++
Punctuation	4.8 74	4.9 76	++	6.5 65	6.6 67	++
Language Usage	4.8 71	4.8 71		6.8 69	6.9 70	++
Map Reading	4.5 75	4.4 74		6.5 71	6.6 72	++
Graphs and Tables	4.6 76	4.6 77	++	6.7 73	6.8 75	++
Reference Materials	4.3 71	4.3 73	++	6.4 66	6.6 70	++
Mathematics Concepts	4.4 72	4.4 72		6.6 73	6.8 76	++
Mathematics Problem Solving	4.3 75	4.3 76		6.3 68	6.3 70	++
Composite	4.5 77	4.6 78	++	6.5 71	6.6 73	++

1. Mean is computed using Normal Curve Equivalent (NCE) scores for all scores.
2. This is the number of students tested on ITBS Composite. The number for each subtest may be slightly higher.
3. Levels of statistical significance are based on the Standard Error of Measurement using differences in Normal Curve Equivalent scores. The levels are indicated by the following symbols. A blank means there was not a significant difference.
 - ++ Highly significant improvement, probability less than .001
 - + Significant improvement, probability less than .01
 - Significant decline, probability less than .01
 - Highly significant decline, probability less than .001

TABLE 1-B-8
COMPARISON OF TEST SCORES FOR 1977 and 1978-- WHITE

(Scores reported are the standard age score (SAS), national percentile rank (PR), and grade equivalent (GE) of the student with the mean score¹)

Tests	Grade 7			Grade 9		
	1977 (N=7374) ²	1978 (N=6678)	Sig. of Diff. ³	1977 (N=7650)	1978 (N=7328)	Sig. of Diff.
Cognitive Abilities Test	<u>SAS</u> <u>PR</u>	<u>SAS</u> <u>PR</u>		<u>SAS</u> <u>PR</u>	<u>SAS</u> <u>PR</u>	
Verbal	108.5 70	108.5 70		109.5 72	109.5 72	
Quantitative	110.0 73	110.5 73		112.5 78	112.0 77	--
Nonverbal	111.5 76	111.5 76	--	113.5 80	113.5 80	
Iowa Tests of Basic Skills	<u>GE</u> <u>PR</u>	<u>GE</u> <u>PR</u>		<u>GE</u> <u>PR</u>	<u>GE</u> <u>PR</u>	
Vocabulary	8.3 61	8.3 62		10.0 63	10.1 64	++
Reading Comprehension	8.1 57	8.1 57		9.9 59	9.9 59	
Spelling	8.1 56	8.1 56	++	9.8 56	9.8 56	
Capitalization	8.6 63	8.6 63	--	10.3 60	10.3 61	++
Punctuation	8.4 61	8.5 62		10.1 60	10.1 60	+
Language Usage	8.5 61	8.5 61		10.1 59	10.1 59	
Map Reading	8.7 68	8.7 67	-	10.2 68	10.2 68	
Graphs and Tables	8.4 63	8.4 63	++	10.1 61	10.2 62	
Reference Materials	8.2 60	8.3 61		10.0 61	10.0 61	
Mathematics Concepts	8.5 65	8.5 65		10.3 60	10.2 59	--
Mathematics Problem Solving	8.1 59	8.1 60	+	9.9 60	9.8 58	--
Composite	8.3 63	8.3 63	++	10.0 64	10.0 64	-

1. Mean is computed using Normal Curve Equivalent (NCE) scores for all scores.
2. This is the number of students tested on ITBS Composite. The number for each subtest may be slightly higher.
3. Levels of statistical significance are based on the Standard Error of Measurement using differences in Normal Curve Equivalent scores. The levels are indicated by the following symbols. A blank means there was not a significant difference.
 - ++ Highly significant improvement, probability less than .001
 - + Significant improvement, probability less than .01
 - Significant decline, probability less than .01
 - Highly significant decline, probability less than .001

TABLE 1-B-9

COMPARISON OF TEST SCORES FOR 1977 AND 1978-- WHITE

(Scores reported are the standard age score (SAS), national percentile rank (PR), and standard score (SS) of the student with the mean score¹)

Tests	Grade 11		
	1977 (N=7232) ²	1978 (N= 7146)	Sig. of Diff. ³
Cognitive Abilities Test	<u>SAS</u> <u>PR</u>	<u>SAS</u> <u>PR</u>	
Verbal	110.0 73	110.0 73	-
Quantitative	-	111.5 76	
Nonverbal	111.5 76	-	
Tests of Academic Progress	<u>SS</u> <u>PR</u>	<u>SS</u> <u>PR</u>	
Social Studies	54 60	53 58	--
Composition	54 63	54 62	--
Science	55 66	54 65	
Reading	54 63	54 62	--
Mathematics	55 69	55 68	-
Literature	54 62	54 60	--
Composite	55 67	55 65	--

1. Mean is computed using Normal Curve Equivalent (NCE) scores for all scores.
2. This is the number of students tested on ITBS Composite. The number for each subtest may be slightly higher.
3. Levels of statistical significance are based on the Standard Error of Measurement using differences in Normal Curve Equivalent scores. The levels are indicated by the following symbols. A blank means there was not a significant difference.
 - ++ Highly significant improvement, probability less than .001
 - + Significant improvement, probability less than .01
 - Significant decline, probability less than .01
 - Highly significant decline, probability less than .001

TABLE 1-B-10
COMPARISON OF TEST SCORES FOR 1977 and 1978-- ASIAN

(Scores reported are the standard age score (SAS), national percentile rank (PR), and grade equivalent (GE) of the student with the mean score¹)

Tests	Grade 3			Grade 5		
	1977 (N= 230) ²	1978 (N= 282)	Sig. of Diff. ³	1977 (N= 232)	1978 (N= 291)	Sig. of Diff.
Cognitive Abilities Test	<u>SAS</u> <u>PR</u>	<u>SAS</u> <u>PR</u>		<u>SAS</u> <u>PR</u>	<u>SAS</u> <u>PR</u>	
Verbal	112.0 77	113.5 80	++	111.5 76	111.5 76	
Quantitative	119.0 88	120.0 90		117.0 86	116.5 85	
Nonverbal	116.5 85	116.5 85		118.0 87	118.0 87	
Iowa Tests of Basic Skills	<u>GE</u> <u>PR</u>	<u>GE</u> <u>PR</u>		<u>GE</u> <u>PR</u>	<u>GE</u> <u>PR</u>	
Vocabulary	4.3 68	4.4 73	++	6.3 64	6.3 65	
Reading Comprehension	4.4 69	4.5 72	++	6.5 69	6.4 67	
Spelling	5.4 84	5.4 84		7.3 78	7.3 78	
Capitalization	5.5 86	5.5 87	+	7.4 78	7.5 79	
Punctuation	5.3 83	5.5 85		7.2 77	7.2 76	
Language Usage	4.7 69	4.7 70		6.7 67	6.7 66	
Map Reading	4.5 76	4.5 76		6.9 78	6.8 77	
Graphs and Tables	4.8 81	4.7 79		7.0 79	7.0 79	
Reference Materials	4.5 78	4.5 79		7.0 76	6.9 75	
Mathematics Concepts	4.6 78	4.6 78		7.2 85	7.2 84	
Mathematics Problem Solving	4.5 83	4.6 84		6.8 80	6.7 79	
Composite	4.7 80	4.8 82	++	6.8 78	6.8 77	

1. Mean is computed using Normal Curve Equivalent (NCE) scores for all scores.
2. This is the number of students tested on ITBS Composite. The number for each subtest may be slightly higher.
3. Levels of statistical significance are based on the Standard Error of Measurement using differences in Normal Curve Equivalent scores. The levels are indicated by the following symbols. A blank means there was not a significant difference.
 - ++ Highly significant improvement, probability less than .001
 - + Significant improvement, probability less than .01
 - Significant decline, probability less than .01
 - Highly significant decline, probability less than .001

TABLE 1-B-11
COMPARISON OF TEST SCORES FOR 1977 and 1978-- ASIAN

(Scores reported are the standard age score (SAS), national percentile rank (PR), and grade equivalent (GE) of the student with the mean score¹)

Tests	Grade 7			Grade 9		
	1977 (N= 217) ²	1978 (N= 238)	Sig. of Diff. ³	1977 (N= 199)	1978 (N= 250)	Sig. of Diff.
Cognitive Abilities Test	<u>SAS</u> <u>PR</u>	<u>SAS</u> <u>PR</u>		<u>SAS</u> <u>PR</u>	<u>SAS</u> <u>PR</u>	
Verbal	110.0 73	109.5 72		109.5 72	107.5 68	--
Quantitative	118.0 87	117.0 86		119.0 88	118.0 87	
Nonverbal	118.0 87	116.5 85	--	119.0 88	118.0 87	
Iowa Tests of Basic Skills	<u>GE</u> <u>PR</u>	<u>GE</u> <u>PR</u>		<u>GE</u> <u>PR</u>	<u>GE</u> <u>PR</u>	
Vocabulary	8.5 67	8.3 63	-	10.0 63	10.1 65	
Reading Comprehension	8.5 64	8.4 62	-	9.9 59	10.0 61	
Spelling	9.2 74	9.3 75		10.8 72	10.9 73	
Capitalization	9.6 76	9.4 73	-	11.1 71	11.2 72	
Punctuation	9.4 76	9.3 74		11.0 73	11.0 73	
Language Usage	8.7 64	8.4 60	-	10.4 63	10.5 64	
Map Reading	9.4 81	9.2 78		10.6 75	10.5 73	
Graphs and Tables	8.9 74	8.7 70	-	10.6 68	10.5 66	
Reference Materials	9.0 74	8.9 71	-	10.3 67	10.5 70	
Mathematics Concepts	9.5 83	9.4 81		11.2 76	11.1 74	
Mathematics Problem Solving	8.7 74	8.7 73		10.3 70	10.3 70	
Composite	8.9 76	8.8 73	--	10.4 72	10.4 72	

1. Mean is computed using Normal Curve Equivalent (NCE) scores for all scores.
2. This is the number of students tested on ITES Composite. The number for each subtest may be slightly higher.
3. Levels of statistical significance are based on the Standard Error of Measurement using differences in Normal Curve Equivalent scores. The levels are indicated by the following symbols. A blank means there was not a significant difference.
 - ++ Highly significant improvement, probability less than .001
 - + Significant improvement, probability less than .01
 - Significant decline, probability less than .01
 - Highly significant decline, probability less than .001

TABLE 1-B-12

COMPARISON OF TEST SCORES FOR 1977 AND 1978-- ASIAN

(Scores reported are the standard age score (SAS), national percentile rank (PR), and standard score (SS) of the student with the mean score¹)

Tests	Grade 11				Sig. of Diff. 3
	1977 (N= 192) ²		1978 (N= 215)		
Cognitive Abilities Test	<u>SAS</u>	<u>PR</u>	<u>SAS</u>	<u>PR</u>	
Verbal	103.7	59	104.0	60	
Quantitative	Not Tested		119.0	88	
Nonverbal	114.0	81	Not Tested		
Tests of Academic Progress	<u>SS</u>	<u>PR</u>	<u>SS</u>	<u>PR</u>	
Social Studies	53	58	53	57	
Composition	55	64	55	65	
Science	57	73	58	76	
Reading	54	63	54	63	
Mathematics	60	83	61	86	
Literature	53	58	53	57	
Composite	56	72	56	71	

1. Mean is computed using Normal Curve Equivalent (NCE) scores for all scores.
2. This is the number of students tested on ITBS Composite. The number for each subtest may be slightly higher.
3. Levels of statistical significance are based on the Standard Error of Measurement using differences in Normal Curve Equivalent scores. The levels are indicated by the following symbols. A blank means there was not a significant difference.
 - ++ Highly significant improvement, probability less than .001
 - + Significant improvement, probability less than .01
 - Significant decline, probability less than .01
 - Highly significant decline, probability less than .001

TABLE 1-B-13
COMPARISON OF TEST SCORES FOR 1977 and 1978--HISPANIC

(Scores reported are the standard age score (SAS), national percentile rank (PR), and grade equivalent (GE) of the student with the mean score¹)

Tests	Grade 3			Grade 5		
	1977 (N=180) ²	1978 (N=185)	Sig. of Diff. ³	1977 (N=187)	1978 (N= 203)	Sig. of Diff.
Cognitive Abilities Test	<u>SAS</u> <u>PR</u>	<u>SAS</u> <u>PR</u>		<u>SAS</u> <u>PR</u>	<u>SAS</u> <u>PR</u>	
Verbal	105.7 64	105.3 63	-	103.5 58	103.3 58	
Quantitative	110.0 73	109.0 71	-	105.3 63	104.5 61	+
Nonverbal	109.0 71	108.0 69	-	109.0 71	109.0 71	
Iowa Tests of Basic Skills	<u>GE</u> <u>PR</u>	<u>GE</u> <u>PR</u>		<u>GE</u> <u>PR</u>	<u>GE</u> <u>PR</u>	
Vocabulary	4.0 60	4.0 57		5.9 53	5.6 47	--
Reading Comprehension	4.1 61	3.9 55	-	5.6 47	5.5 45	
Spelling	4.4 66	4.4 66		5.9 53	5.8 52	
Capitalization	4.9 76	4.7 73		6.2 58	5.9 53	-
Punctuation	4.6 70	4.6 70		5.9 54	6.0 55	
Language Usage	4.3 62	4.2 60		5.9 53	5.9 52	
Map Reading	4.1 64	4.0 60	-	6.2 62	5.8 53	--
Graphs and Tables	4.4 70	4.1 65	-	6.0 56	5.9 54	
Reference Materials	4.1 63	4.1 61		5.9 55	5.9 53	
Mathematics Concepts	4.1 63	3.9 58	--	6.1 60	5.9 55	-
Mathematics Problem Solving	4.2 68	4.1 64		5.9 55	5.8 52	
Composite	4.2 67	4.0 63	--	5.9 55	5.7 51	--

1. Mean is computed using Normal Curve Equivalent (NCE) scores for all scores.
2. This is the number of students tested on ITBS Composite. The number for each subtest may be slightly higher.
3. Levels of statistical significance are based on the Standard Error of Measurement using differences in Normal Curve Equivalent scores. The levels are indicated by the following symbols. A blank means there was not a significant difference.
 - ++ Highly significant improvement, probability less than .001
 - + Significant improvement, probability less than .01
 - Significant decline, probability less than .01
 - Highly significant decline, probability less than .001

TABLE 1-B-14
COMPARISON OF TEST SCORES FOR 1977 and 1978-- HISPANIC

(Scores reported are the standard age score (SAS), national percentile rank (PR), and grade equivalent (GE) of the student with the mean score¹)

Tests	Grade 7			Grade 9		
	1977 (N=236) ²	1978 (N=200)	Sig. of Diff. ³	1977 (N= 220)	1978 (N= 219)	Sig. of Diff.
Cognitive Abilities Test	<u>SAS</u> <u>PR</u>	<u>SAS</u> <u>PR</u>		<u>SAS</u> <u>PR</u>	<u>SAS</u> <u>PR</u>	
Verbal	99.0 48	101.3 53	++	100.5 51	99.5 49	
Quantitative	103.0 57	105.3 63	++	105.0 62	104.0 60	
Nonverbal	107.5 68	107.5 68		108.0 69	109.5 72	+
Iowa Tests of Basic Skills	<u>GE</u> <u>PR</u>	<u>GE</u> <u>PR</u>		<u>GE</u> <u>PR</u>	<u>GE</u> <u>PR</u>	
Vocabulary	7.5 45	7.6 47		9.1 45	9.2 46	
Reading Comprehension	7.3 43	7.4 45		8.8 42	8.7 40	
Spelling	7.7 50	7.7 50		9.3 49	9.1 47	
Capitalization	7.9 52	8.1 55		9.5 50	9.3 47	
Punctuation	7.7 50	8.0 54	+	9.4 50	9.5 51	
Language Usage	7.4 46	7.7 50		9.4 50	9.2 48	
Map Reading	8.2 58	8.2 58		9.3 52	9.3 52	
Graphs and Tables	7.6 46	7.6 47		9.2 45	9.0 42	
Reference Materials	7.7 49	7.9 52	+	9.2 46	9.1 44	
Mathematics Concepts	7.8 50	8.0 55	+	9.3 45	9.1 43	
Mathematics Problem Solving	7.6 46	7.7 48		8.7 39	8.7 38	
Composite	7.6 49	7.7 51	++	9.1 47	9.0 45	+

1. Mean is computed using Normal Curve Equivalent (NCE) scores for all scores.
2. This is the number of students tested on ITBS Composite. The number for each subtest may be slightly higher.
3. Levels of statistical significance are based on the Standard Error of Measurement using differences in Normal Curve Equivalent scores. The levels are indicated by the following symbols. A blank means there was not a significant difference.
 - ++ Highly significant improvement, probability less than .001
 - + Significant improvement, probability less than .01
 - Significant decline, probability less than .01
 - Highly significant decline, probability less than .001

TABLE 1-B-15

COMPARISON OF TEST SCORES FOR 1977 AND 1978-- HISPANIC

(Scores reported are the standard age score (SAS), national percentile rank (PR), and standard score (SS) of the student with the mean score¹)

Tests	Grade 11		
	1977 (N=191) ²	1978 (N= 190)	Sig. of Diff. ³
Cognitive Abilities Test	<u>SAS</u> <u>PR</u>	<u>SAS</u> <u>PR</u>	
Verbal	98.7 47	100.0 50	+
Quantitative	Not Tested	102.0 55	
Nonverbal	104.5 61	Not Tested	
Tests of Academic Progress	<u>SS</u> <u>PR</u>	<u>SS</u> <u>PR</u>	
Social Studies	48 38	48 39	
Composition	49 44	49 44	
Science	49 45	49 48	
Reading	50 46	50 48	
Mathematics	50 50	50 49	
Literature	49 41	50 44	
Composite	49 44	50 45	

1. Mean is computed using Normal Curve Equivalent (NCE) scores for all scores.
2. This is the number of students tested on ITBS Composite. The number for each subtest may be slightly higher.
3. Levels of statistical significance are based on the Standard Error of Measurement using differences in Normal Curve Equivalent scores. The levels are indicated by the following symbols. A blank means there was not a significant difference.
 - ++ Highly significant improvement, probability less than .001
 - + Significant improvement, probability less than .01
 - Significant decline, probability less than .01
 - Highly significant decline, probability less than .001

TABLE 1-B-16

Number and Percent of Enrolled Black
Students Tested in 1977 and in 1978

Grade	1977			1978		
	Enrollment	Tested	Percent Tested	Enrollment	Tested	Percent Tested
3	795	749	94	802	751	94
5	791	758	96	800	779	97
7	912	815	89	813	762	94
9	820	722	88	853	732	86
11	807	585	72	801	613	77
	4,125	3,629	88	4,069	3,637	89

TABLE 1-B-17

Number and Percent of Enrolled White
Students Tested in 1977 and in 1978

Grade	1977			1978		
	Enrollment	Tested	Percent Tested	Enrollment	Tested	Percent Tested
3	6,417	6,184	96	6,542	6,374	97
5	6,736	6,568	98	6,439	6,261	97
7	7,884	7,374	94	7,145	6,678	93
9	8,472	7,650	90	8,141	7,328	90
11	8,647	7,232	84	8,412	7,146	85
	38,156	35,008	92	36,679	33,787	92

TABLE 1-B-18

Number and Percent of Enrolled Asian
Students Tested in 1977 and in 1978

Grade	1977			1978		
	Enrollment	Tested	Percent Tested	Enrollment	Tested	Percent Tested
3	274	230	84	315	282	90
5	278	232	83	331	291	88
7	290	217	75	302	238	79
9	264	199	75	309	250	81
11	267	192	72	296	215	73
	1,373	1,070	78	1,553	1,276	82

TABLE 1-B-19

Number and Percent of Enrolled Hispanic
Students Tested in 1977 and in 1978

Grade	1977			1978		
	Enrollment	Tested	Percent Tested	Enrollment	Tested	Percent Tested
3	263	180	68	229	185	81
5	250	187	75	242	203	84
7	289	236	82	258	200	78
9	299	220	74	304	219	72
11	296	191	65	279	190	68
	1,397	1,014	73	1,312	997	76

TABLE 1-B-20

Percent of Students in Each Racial Group Scoring
at Each Stanine - Verbal

<u>Stanine</u>	<u>White</u>	<u>Grade 3</u> <u>Black</u>	<u>Asian</u>	<u>Hispanics</u>	<u>Norm</u>
9	18	5	18	4	4
8	15	6	14	7	7
7	20	12	25	20	12
6	17	18	17	21	17
5	14	19	12	21	20
4	9	17	10	17	17
3	5	13	4	6	12
2	2	7	0	3	7
1	1	2	1	2	4
Number	6432	759	282	187	
		<u>Grade 5</u>			
9	15	4	12	5	4
8	19	6	20	8	7
7	17	8	21	13	12
6	21	19	17	20	17
5	15	18	14	15	20
4	8	20	9	24	17
3	4	16	5	10	12
2	2	6	2	2	7
1	1	4	0	2	4
Number	6329	790	294	202	
		<u>Grade 7</u>			
9	9	2	14	5	4
8	13	2	12	6	7
7	17	8	17	11	12
6	20	12	14	16	17
5	21	18	21	21	20
4	12	23	14	24	17
3	6	18	6	11	12
2	2	12	3	4	7
1	1	6	0	2	4
Number	6887	785	239	202	
		<u>Grade 9</u>			
9	12	2	17	4	4
8	12	5	14	5	7
7	18	6	13	12	12
6	20	12	15	16	17
5	17	17	11	17	20
4	11	18	11	24	17
3	6	19	10	12	12
2	2	11	7	8	7
1	1	10	2	3	4
Number	7751	787	253	235	
		<u>Grade 11</u>			
9	13	3	15	5	4
8	12	5	11	9	7
7	18	8	11	11	12
6	20	11	12	14	17
5	18	20	14	19	20
4	11	18	8	16	17
3	5	16	9	10	12
2	2	12	12	13	7
1	1	8	7	4	4
Number	7539	626	219	207	

TABLE 1-B-21

Percent of Students in Each Racial Group Scoring
at Each Stanine - Composite

<u>Stanine</u>	<u>White</u>	<u>Grade 3</u> <u>Black</u>	<u>Asian</u>	<u>Hispanic</u>	<u>Norm</u>
9	11	2	14	2	4
8	24	6	22	9	7
7	20	10	21	24	12
6	20	22	23	27	17
5	13	22	11	17	20
4	6	14	5	9	17
3	3	9	2	7	12
2	2	8	1	2	7
1	2	7	0	4	4
Number	6374	751	282	185	
		<u>Grade 5</u>			
9	9	2	10	2	4
8	16	3	21	9	7
7	22	9	22	14	12
6	19	14	19	19	17
5	17	19	16	20	20
4	8	17	5	15	17
3	4	14	3	8	12
2	2	8	1	6	7
1	3	15	2	7	4
Number	6261	779	291	203	
		<u>Composite-Grade 7</u>			
9	5	.4	8	2	4
8	11	2	15	6	7
7	19	5	24	14	12
6	21	9	17	20	17
5	21	18	20	24	20
4	12	19	9	18	17
3	6	15	4	11	12
2	3	12	2	4	7
1	3	19	1	4	4
Number	6678	762	238	200	
		<u>Composite-Grade 9</u>			
9	4	1	8	1	4
8	14	2	21	4	7
7	18	5	19	11	12
6	20	8	14	14	17
5	22	17	17	31	20
4	13	21	13	22	17
3	6	12	5	6	12
2	3	15	3	6	7
1	2	19	1	6	4
Number	7327	731	250	219	
		<u>Composite-Grade 11</u>			
9	9	1	13	4	4
8	11	2	12	5	7
7	15	4	16	7	12
6	20	12	21	16	17
5	20	14	15	23	20
4	11	18	9	16	17
3	8	19	7	12	12
2	4	14	5	12	7
1	3	16	2	7	4
Number	7146	613	215	190	

1-C. ANALYSIS OF TEST RESULTS BY SEX

Rationale, Data, and Data Analysis

Rationale

As has been discussed in section 1-B, the superintendent of schools has identified educational equity a priority objective for the next five years. As a part of the monitoring of the educational equity effort, 1977-78 scores on the Iowa Tests of Basic Skills (ITBS), Tests of Academic Progress (TAP), and the Cognitive Abilities Test (CAT) have been analyzed by sex.

Male and female scores were analyzed separately by year and grade to determine if the performance of either group deviated from the countywide 1977-78 pattern. Comparisons of male/female performance in 1978 were made in order to monitor a pattern which appeared in 1977 when test data were reported by sex for the first time: females tended to perform better than males at all grade levels tested in language skills (but not necessarily reading), and males tended to outperform females in mathematics.

Data

Tables 1-C-1 to 1-C-3 compare the 1977-78 performance of females in Grades 3, 5, 7, 9, and 11 on the CAT and either the ITBS or the TAP. Tables 1-C-4 to 1-C-6 show the same comparisons for males. Table 1-C-7 summarizes for both males and females the number and direction of 1977-78 performance differences which were statistically significant.

Tables 1-C-8 to 1-C-10 compare performance by sex on the CAT and either the ITBS or the TAP for 1978. Table 1-C-11 summarizes the number and direction of male/female performance differences which were statistically significant.

Analysis

Group mean scores were computed by the use of normal curve equivalent scores, as were tests of significance of differences (see chapter introduction). For purposes of reporting, results were transformed back to standard age scores, grade equivalent scores, standard scores, and percentile ranks.

Cautions in Data Interpretation

Cautions to be observed in interpreting data are those which are discussed in the introduction to this chapter. No additional caveats apply here.

Results

Female/Male, 1977-78

There were no major differences between the performance of either females or males as a group and the performance of the tested population as a whole

(Tables 1-C-1 to 1-C-7). The overall tendency was for 1978 means to be higher than 1977 means in Grades 3 and 5. In Grade 11, CAT means of both groups were approximately equal in the two years. On the TAP, Grade 11 female means were about the same in 1978 as in 1977, which is also true for the total population. Male means on the TAP, however, were lower in 1978 than in 1977 on all six tests and thus also on the TAP Composite.

Among both males and females at all grade levels, there were some minor deviations from the general county pattern on some tests. However, they can probably be explained by sampling fluctuation (see cautions in chapter introduction).

Male/Female Differences, 1978

In Grades 3, 5, and 7 (Tables 1-C-8 and 1-C-9), female mean scores were higher than male means on all or most of the CAT tests, on a majority of the ITBS tests, and on the ITBS Composite. In Grade 9 (Table 1-C-9), neither group displayed clear superiority on the CAT, but female means were again higher than male means on more than half of the ITBS tests and on the ITBS Composite. In Grade 11 (Table 1-C-10), neither group can be said to have outperformed the other. On the CAT, the male mean was the higher on one test and the female the higher on another. On the TAP, male means were higher on three tests and female means higher on three, with no difference on the TAP Composite. Most of the differences in means described here were statistically significant (Table 1-C-11). However, it must be remembered that there were more than 3,000 students in each of the two groups and that such large samples have a strong effect on determining significance of differences (see chapter introduction).

In general, female means were higher than male means on language tests; and male means tended to be higher than female means on mathematics, map reading, graphs, and science tests. At the lower grade levels, however, females tended to perform almost as well as males in mathematics. By about Grade 7, differences between the two groups became more pronounced.

These trends probably reflect general national cultural patterns. Data from tests given in the National Assessment of Educational Progress (NAEP) in 1972-73 show that at all age levels tested (9, 13, 17, adult), male performance in mathematics fundamentals was superior to female performance on difficult exercises and on word problems.⁵ Females tended to perform better than males on "pure computation." In fact, at ages 9 and 13 females tended to outperform males, but by age 17 males performed better than females on mathematics fundamentals. At the adult level, males far outperformed females.

The NAEP reading report covers the years 1970-71 and 1974-75. At all age levels (9, 13, and 17) females outperformed males in literal reading comprehension, inferential comprehension, and reference skills.⁶

⁵Math Fundamentals, Mathematics Report No. 04-MA-01, 1975, National Assessment of Educational Progress, Denver, Colorado.

⁶Reading in America, Reading Report No. 06-R-01, 1976, National Assessment of Educational Progress, Denver, Colorado.

It should be mentioned that NAEP data are based on a particular set of tests and do not always agree with data derived from other tests. National data derived from the Scholastic Aptitude Test (SAT) show males slightly ahead of females in verbal skills and quite far ahead in mathematics. The same thing is true of male/female performance on the SAT in Montgomery County. However, SAT scores may reflect motivational and other variables which are different from those tapped by the ITBS or by the NAEP tests. In any case since MCPS male/female trends are consistent in most respects with NAEP data, there is no reason to believe that the sex differences in performance in 1978 are unique to the county.

TABLE 1-C-1

COMPARISON OF TEST SCORES FOR 1977 AND 1978 - FEMALE
(Scores reported are the standard age score (SAS), national percentile rank (PR), and grade equivalent (GE) of the student with the mean score¹)

Tests	Grade 3			Grade 5		
	1977 (N= 3758) ²	1978 (N=3844)	Sig. of 3 Diff.	1977 (N= 3867)	1978 (N=3737)	Sig. of Diff.
Cognitive Abilities Test	SAS PR	SAS PR		SAS PR	SAS PR	
Verbal	113.0 79	113.0 79	+ +	111.5 76	112.5 78	+ +
Quantitative	114.0 81	114.5 82	+ +	110.5 74	111.0 75	
Nonverbal	111.5 76	111.5 76	+	112.0 77	113.0 79	+ +
Iowa Tests of Basic Skills	GE PR	GE PR		GE PR	GE PR	
Vocabulary	4.3 70	4.4 71	+ +	6.3 64	6.3 65	
Reading Comprehension	4.5 70	4.5 70		6.3 63	6.3 64	+ +
Spelling	4.9 76	5.0 77	+ +	6.7 69	6.8 70	+ +
Capitalization	5.1 81	5.2 82	+ +	6.9 71	7.0 72	
Punctuation	4.9 77	5.1 79	+ +	6.8 70	6.8 70	+ +
Language Usage	4.8 72	4.9 73		6.9 70	6.8 70	
Map Reading	4.3 70	4.3 70		6.3 66	6.4 67	+
Graphs and Tables	4.6 76	4.6 76	+ +	6.5 68	6.5 70	+ +
Reference Materials	4.3 73	4.4 74	+ +	6.5 68	6.6 70	+ +
Mathematics Concepts	4.3 70	4.3 69	- -	6.5 70	6.5 71	+ +
Mathematics Problem Solving	4.3 74	4.3 74		6.2 65	6.2 66	
Composite	4.5 76	4.5 77	+ +	6.4 70	6.5 71	+ +

1. Mean is computed using Normal Curve Equivalent (NCE) scores for all scores.
2. This is the number of student tested on the ITBS Composite. The number for each subtest may be slightly larger.
3. Levels of statistical significance are based on the Standard Error of Measurement. They are indicated by the following symbols. A blank means there was not a significant difference.
 - ++ Highly significant increase, probability less than .001
 - + Significant increase, probability less than .01
 - Significant decrease, probability less than .01
 - Highly significant decrease, probability less than .001

TABLE 1-C-2

COMPARISON OF TEST SCORES FOR 1977 AND 1978 FEMALE
 (Scores reported are the standard age score, SAS; national percentile rank, PR;
 and grade equivalent, GE, of the student with the mean score¹)

Tests	Grade 7			Grade 9		
	1977 (N= 4317) ²	1978 (N= 4040)	Sig. of 3 Diff.	1977 (N=4470)	1978 (N= 4267)	Sig. of Diff.
Cognitive Abilities Test	<u>SAS</u> <u>PR</u>	<u>SAS</u> <u>PR</u>		<u>SAS</u> <u>PR</u>	<u>SAS</u> <u>PR</u>	
Verbal	108.0 69	108.0 69	+	109.0 71	108.5 70	- -
Quantitative	108.5 70	108.5 70	+ +	110.5 74	110.0 73	-
Nonverbal	111.0 75	110.0 73		112.5 78	112.5 78	
Iowa Tests of Basic Skills	<u>GE</u> <u>PR</u>	<u>GE</u> <u>PR</u>		<u>GE</u> <u>PR</u>	<u>GE</u> <u>PR</u>	
Vocabulary	8.1 57	8.1 58	+	9.9 60	9.9 61	
Reading Comprehension	7.9 54	8.0 55		9.7 56	9.7 56	
Spelling	8.4 60	8.4 61	+ +	10.7 61	10.1 61	
Capitalization	8.8 65	8.8 65		10.5 63	10.5 63	
Punctuation	8.6 63	8.7 65	+ +	10.3 63	10.3 63	
Language Usage	8.6 63	8.6 63		10.3 62	10.3 62	
Map Reading	8.4 62	8.4 61		9.8 60	9.8 60	
Graphs and Tables	8.1 58	8.2 60	+ +	9.8 56	9.8 56	
Reference Materials	8.4 62	8.4 62		10.1 62	10.0 61	-
Mathematics Concepts	8.2 60	8.3 61		9.9 55	9.8 53	- -
Mathematics Problem Solving	7.9 54	8.0 55		9.4 51	9.5 52	+ +
Composite	8.2 61	8.2 62	+ +	9.9 62	9.9 62	

1. Mean is computed using Normal Curve Equivalent (NCE) scores for all scores.
2. This is the number of student tested on the ITBS Composite. The number for each subtest may be slightly larger.
3. Levels of statistical significance are based on the Standard Error of Measurement. They are indicated by the following symbols. A blank means there was not a significant difference.
 - ++ Highly significant increase, probability less than .001
 - + Significant increase, probability less than .01
 - Significant decrease, probability less than .01
 - Highly significant decrease, probability less than .001

TABLE 1-C-3

COMPARISON OF TEST SCORES FOR 1977 AND 1978: FEMALE
 (Scores reported are the standard age score, SAS; national percentile rank, PR;
 and grade equivalent, GE, of the student with the mean score¹)

Tests	Grade 11				Sig. of Diff. ³
	1977 (N=4077) ²		1978 (N=4070)		
Cognitive Abilities Test	<u>SAS</u>	<u>PR</u>	<u>SAS</u>	<u>PR</u>	
Verbal	109.5	72	110.0	73	
Quantitative	Not Tested		109.5	72	
Nonverbal	109.5	72	Not Tested		
Tests of Academic Progress	<u>SS</u>	<u>PR</u>	<u>SS</u>	<u>PR</u>	
Social Studies	51	51	51	51	
Composition	55	65	55	66	
Science	52	58	53	59	
Reading	53	61	53	60	
Mathematics	54	62	54	63	+
Literature	54	61	54	60	-
Composite	54	63	54	63	

1. Mean is computed using Normal Curve Equivalent (NCE) scores for all scores.
2. This is the number of students tested on TAP Composite. The number for each subtest may be slightly higher.
3. Levels of statistical significance are based on the Standard Error of Measurement using differences in Normal Curve Equivalent scores. The levels are indicated by the following symbols. A blank means there was not a significant difference.
 - ++ Highly significant increase, probability less than .001
 - + Significant increase, probability less than .01
 - Significant decrease, probability less than .01
 - Highly significant decrease, probability less than .001

TABLE 1-C-4

COMPARISON OF TEST SCORES FOR 1977 AND 1978: MALE
 (Scores reported are the standard age score, SAS; national percentile rank, PR;
 and grade equivalent, GE, of the student with the mean score¹)

Tests	Grade 3			Grade 5		
	1977 (N= 3632) ²	1978 (N= 3829)	Sig. of 3 Diff.	1977 (N=3923)	1978 (N= 3821)	Sig. of Diff.
Cognitive Abilities Test	<u>SAS</u> <u>PR</u>	<u>SAS</u> <u>PR</u>		<u>SAS</u> <u>PR</u>	<u>SAS</u> <u>PR</u>	
Verbal	109.5 72	110.0 73	+ +	108.0 69	109.5 72	+ +
Quantitative	113.0 79	113.5 80	+ +	110.0 73	111.0 75	+ +
Nonverbal	109.5 72	110.0 73	+ +	110.0 73	111.5 76	+ +
Iowa Tests of Basic Skills	<u>GE</u> <u>PR</u>	<u>GE</u> <u>PR</u>		<u>GE</u> <u>PR</u>	<u>GE</u> <u>PR</u>	
Vocabulary	4.3 69	4.3 70	+ +	6.2 62	6.2 63	+ +
Reading Comprehension	4.3 65	4.3 66	+ +	6.0 57	6.1 60	+ +
Spelling	4.5 67	3.9 55	+ +	5.9 54	6.1 58	+ +
Capitalization	4.6 71	4.7 73	+ +	6.3 61	6.5 63	+ +
Punctuation	4.5 68	4.6 70	+ +	6.0 55	6.1 57	+ +
Language Usage	4.4 63	4.5 65	+ +	6.3 59	6.4 62	+ +
Map Reading	4.4 73	4.4 73		6.4 69	6.5 70	+ +
Graphs and Tables	4.4 71	4.5 73	+ +	6.5 71	6.7 73	+ +
Reference Materials	4.1 63	4.1 66	+ +	6.1 59	6.2 62	+ +
Mathematics Concepts	4.3 70	4.3 70		6.5 70	6.6 73	+ +
Mathematics Problem Solving	4.2 70	4.2 72	+ +	6.1 63	6.2 65	+ +
Composite	4.4 72	4.4 73	+ +	6.7 63	6.3 67	+ +

1. Mean is computed using Normal Curve Equivalent (NCE) scores for all scores.
2. This is the number of student tested on the ITBS Composite. The number for each subtest may be slightly larger.
3. Levels of statistical significance are based on the Standard Error of Measurement. They are indicated by the following symbols. A blank means there was not a significant difference.
 - ++ Highly significant increase, probability less than .001
 - + Significant increase, probability less than .01
 - Significant decrease, probability less than .01
 - Highly significant decrease, probability less than .001

TABLE 1-C-5
COMPARISON OF TEST SCORES FOR 1977 AND 1978 - MALE
(Scores reported are the standard age score (SAS), national percentile rank (PR), and grade equivalent (GE) of the student with the mean score¹)

Tests	Grade 7					Grade 9				
	1977 (N=4378) ²		1978 (N= 3876)		Sig. of 3 Diff.	1977 (N=4381)		1978 (N=4300)		Sig. of Diff.
Cognitive Abilities Test	<u>SAS</u>	<u>PR</u>	<u>SAS</u>	<u>PR</u>		<u>SAS</u>	<u>PR</u>	<u>SAS</u>	<u>PR</u>	
Verbal	105.3	63	105.3	63	+ +	106.0	65	106.5	65	
Quantitative	108.5	70	108.5	70	+	111.5	76	111.0	75	- -
Nonverbal	110.0	73	110.0	73		112.0	77	112.0	77	
Iowa Tests of Basic Skills	<u>GE</u>	<u>PR</u>	<u>GE</u>	<u>PR</u>		<u>GE</u>	<u>PR</u>	<u>GE</u>	<u>PR</u>	
Vocabulary	8.0	56	8.1	57		9.9	60	9.9	61	+
Reading Comprehension	7.8	51	7.8	52		9.6	54	9.6	55	+
Spelling	7.6	48	7.6	48		9.1	47	9.1	47	
Capitalization	8.1	55	8.0	54		9.6	51	9.7	52	+ +
Punctuation	7.9	52	7.9	52		9.4	50	9.6	52	+ +
Language Usage	7.8	51	7.8	51		9.4	50	9.5	51	
Map Reading	8.7	67	8.7	67		10.2	68	10.2	68	
Graphs and Tables	8.2	59	8.2	60	+	10.1	60	10.1	60	
Reference Materials	7.9	54	7.9	54		9.6	54	9.6	55	
Mathematics Concepts	8.4	63	8.4	63		10.2	59	10.1	57	- -
Mathematics Problem Solving	8.0	56	8.1	58	+ +	9.6	55	9.7	57	+ +
Composite	8.0	57	8.0	58	+ +	9.8	59	9.8	60	

- Mean is computed using Normal Curve Equivalent (NCE) scores for all scores.
- This is the number of student tested on the ITBS Composite. The number for each subtest may be slightly larger.
- Levels of statistical significance are based on the Standard Error of Measurement. They are indicated by the following symbols. A blank means there was not a significant difference.
 - ++ Highly significant increase, probability less than .001
 - + Significant increase, probability less than .01
 - Significant decrease, probability less than .01
 - Highly significant decrease, probability less than .001

TABLE 1-C-6
COMPARISON OF TEST SCORES FOR 1977 AND 1978--MALE

(Scores reported are the standard age score (SAS), national percentile rank (PR), and standard score (SS) of the student with the mean score¹)

Tests	Grade 11				
	1977 (N=4168) ²		1978 (N=4117)		Sig. of Diff. ³
Cognitive Abilities Test	<u>SAS</u>	<u>PR</u>	<u>SAS</u>	<u>PR</u>	
Verbal	108.5	70	107.5	68	- -
Quantitative	Not Tested		111.5	76	
Nonverbal	110.5	74	Not Tested		
Tests of Academic Progress	<u>SS</u>	<u>PR</u>	<u>SS</u>	<u>PR</u>	
Social Studies	54	62	53	58	- -
Composition	51	52	51	51	- -
Science	55	68	55	67	-
Reading	53	60	52	57	- -
Mathematics	56	70	55	68	- -
Literature	52	55	52	53	- -
Composite	54	64	54	62	- -

1. Mean is computed using Normal Curve Equivalent (NCE) scores for all scores.
2. This is the number of students tested on TAP Composite. The number for each subtest may be slightly higher.
3. Levels of statistical significance are based on the Standard Error of Measurement using differences in Normal Curve Equivalent scores. The levels are indicated by the following symbols. A blank means there was not a significant difference.
 - ++ Highly significant increase, probability less than .001
 - + Significant increase, probability less than .01
 - Significant decrease, probability less than .01
 - Highly significant decrease, probability less than .001

TABLE 1-C-7
NUMBER OF SIGNIFICANT DIFFERENCES
IN 1977-78 MEANS BY SEX AND TEST

	FEMALE				MALE			
	1978 Higher		1978 Lower		1978 Higher		1978 Lower	
	N	%	N	%	N	%	N	%
<u>CAT: 3 subtests</u>								
Grade 3	3	100%			3	100%		
Grade 5	2	67%			3	100%		
Grade 7	2	67%	1	33%	2	67%	1	33%
Grade 9			2	67%			1	33%
(1 subtest) 11								
<u>ITBS</u>								
11 Subtests								
Grade 3	6	55%	1	9%	9	82%		
Grade 5	7	64%			11	100%		
Grade 7	4	36%			2	18%		
Grade 9	1	9%	2	18%	5	45%	1	9%
<u>Composite</u>								
Grade 3	x				x			
Grade 5	x				x			
Grade 7	x				x			
Grade 9								
<u>TAP (Gr.11)</u>								
6 Subtests	1	17%					6	100%
Composite							x	

x-Composite mean score difference significant; direction shown by column.
No entry means 1977-78 difference was not significant.

TABLE 1-C-8
COMPARISON OF TEST SCORES FOR MALES AND FEMALES - 1978
(Scores reported are the standard age score (SAS), national percentile rank (PR), and grade equivalent (GE) of the student with the mean score¹)

Tests	Grade 3 1978			Grade 5 1978		
	FEMALE (N=3844) ²	MALE (N=3829)	Sig. of 3 Diff.	FEMALE (N=3737)	MALE (N= 3821)	Sig. of Diff.
Cognitive Abilities Test	SAS PR	SAS PR		SAS PR	SAS PR	
Verbal	113.0 79	110.0 73	+ + F	112.5 78	109.5 72	+ + F
Quantitative	114.5 82	113.5 80	+ + F	111.0 75	111.0 75	
Nonverbal	111.5 76	110.0 73	+ + F	113.0 79	111.5 76	+ + F
Iowa Tests of Basic Skills	GE PR	GE PR		GE PR	GE PR	
Vocabulary	4.4 71	4.3 70	+ + F	6.3 65	6.2 63	+ + F
Reading Comprehension	4.5 70	4.3 66	+ + F	6.3 64	6.1 60	+ + F
Spelling	5.0 77	3.9 55	+ + F	6.8 70	6.1 58	+ + F
Capitalization	5.2 82	4.7 73	+ + F	7.0 72	6.5 63	+ + F
Punctuation	5.1 79	4.6 70	+ + F	6.8 70	6.1 57	+ + F
Language Usage	4.9 73	4.5 65	+ + F	6.8 70	6.4 62	+ + F
Map Reading	4.3 70	4.4 73	+ + M	6.4 67	6.3 70	+ + M
Graphs and Tables	4.6 76	4.5 73	+ + F	6.5 70	6.7 73	+ + M
Reference Materials	4.4 74	4.1 66	+ + F	6.6 70	6.2 62	+ + F
Mathematics Concepts	4.3 69	4.3 70	+ + M	6.5 71	6.6 73	+ + M
Mathematics Problem Solving	4.3 74	4.2 72	+ + F	6.2 66	6.2 65	
Composite	4.5 77	4.4 73	+ + F	6.5 71	6.3 67	+ + F

1. Mean is computed using Normal Curve Equivalent (NCE) scores for all scores.
2. This is the number of students tested on the ITBS Composite. The number for each subtest may be slightly larger.
3. Levels of statistical significance are based on the Standard Error of Measurement. They are indicated by the following symbols. A blank means there was not a significant difference.
 ++ F Highly significant difference favoring females, probability less than .001
 + F Significant difference favoring females, probability less than .01
 + M Significant difference favoring males, probability less than .01
 ++ M Highly significant difference favoring males, probability less than .001

TABLE 1-C-9

COMPARISON OF TEST SCORES FOR MALES AND FEMALES - 1978
(Scores reported are the standard age score (SAS), national percentile rank (PR), and grade equivalent (GE) of the student with the mean score)

Tests	Grade 7			Grade 9		
	FEMALE (N=4040) ²	MALE (N=3876)	Sig. of 3 Diff.	FEMALE (N=4267)	MALE (N=4300)	Sig. of Diff.
Cognitive Abilities Test	SAS PR	SAS PR		SAS PR	SAS PR	
Verbal	108.0 69	105.3 63	+ +F	108.5 70	106.5 65	+ + F
Quantitative	108.5 70	108.5 70		110.0 73	111.0 75	+ +M
Nonverbal	110.5 74	110.0 73	+ + F	112.5 78	112.0 77	
Iowa Tests of Basic Skills	GE PR	GE PR		GE PR	GE PR	
Vocabulary	8.1 58	8.1 57	+ F	9.9 61	9.9 61	
Reading Comprehension	8.0 55	7.8 52	+ + F	9.7 56	9.6 55	+ + F
Spelling	8.4 61	7.6 48	+ + F	10.1 61	9.1 47	+ + F
Capitalization	8.8 65	8.0 54	+ + F	10.5 63	9.7 52	+ + F
Punctuation	8.7 65	7.9 52	+ + F	10.3 63	9.6 52	+ + F
Language Usage	8.6 63	7.8 51	+ + F	10.3 62	9.5 51	+ F
Map Reading	8.4 61	8.7 67	+ + M	9.8 60	10.2 68	+ + M
Graphs and Tables	8.2 60	8.2 60		9.8 56	10.1 60	+ + M
Reference Materials	8.4 62	7.9 54	+ F	10.1 62	9.6 55	+ + F
Mathematics Concepts	8.3 61	8.4 63	+ +M	9.9 55	10.1 57	+ + M
Mathematics Problem Solving	8.0 55	8.1 58	+ +M	9.4 51	9.7 57	+ + M
Composite	8.2 62	8.0 58	+ +F	9.9 62	9.8 60	+ + F

1. Mean is computed using Normal Curve Equivalent (NCE) scores for all scores.
2. This is the number of students tested on the ITBS Composite. The number for each subtest may be slightly larger.
3. Levels of statistical significance are based on the Standard Error of Measurement. They are indicated by the following symbols. A blank means there was not a significant difference.
 - ++ F Highly significant difference favoring females, probability less than .001
 - + F Significant difference favoring females, probability less than .01
 - + M Significant difference favoring males, probability less than .01
 - ++ M Highly significant difference favoring males, probability less than .001

TABLE 1-C-10

COMPARISON OF TEST SCORES FOR MALES AND FEMALES - 1978

(Scores reported are the standard age score (SAS), national percentile rank (PR), and standard score (SS) of the student with the mean score¹)

Tests	Grade 11				Sig. of Diff. ³
	FEMALE (N=4070) ²		MALE (N=4117)		
Cognitive Abilities Test	<u>SAS</u>	<u>PR</u>	<u>SAS</u>	<u>PR</u>	
Verbal	110.0	73	107.5	68	+ + F
Quantitative	109.5	72	111.5	76	+ + M
Nonverbal	Not Tested		Not Tested		
Tests of Academic Progress	<u>SS</u>	<u>PR</u>	<u>SS</u>	<u>PR</u>	
Social Studies	51	51	53	58	+ + M
Composition	55	56	51	51	+ + F
Science	53	59	55	67	+ + M
Reading	53	60	52	57	+ + F
Mathematics	54	63	55	68	+ + M
Literature	54	60	52	53	+ + F
Composite	54	63	54	62	

1. Mean is computed using Normal Curve Equivalent (NCE) scores for all scores.
2. This is the number of students tested on the ITBS Composite. The number for each subtest may be slightly larger.
3. Levels of statistical significance are based on the Standard Error of Measurement. They are indicated by the following symbols. A blank means there was not a significant difference.
 - ++ F Highly significant difference favoring females, probability less than .001
 - + F Significant difference favoring females, probability less than .01
 - + M Significant difference favoring males, probability less than .01
 - ++ M Highly significant difference favoring males, probability less than .001

TABLE 1-C-11

NUMBER OF SIGNIFICANT DIFFERENCES
IN 1978 MEANS BY SEX AND TEST

CAT: 3 Tests	Male Higher		Female Higher	
	N	%	N	%
Grade 3			3	100%
Grade 5			2	67%
Grade 7			2	67%
Grade 9	1	33%	1	33%
Grade 11 (2 tests)	1	33%	1	33%
 <u>ITBS: 11 Tests</u>				
Grade 3	3	27%	8	73%
Grade 5	3	27%	7	64%
Grade 7	3	27%	7	64%
Grade 9	4	36%	6	55%
 <u>ITBS: Composite</u>				
Grade 3			x	
Grade 5			x	
Grade 7			x	
Grade 9			x	
 <u>TAP: Grade 11 Only</u>				
6 Tests	3	50%	3	50%
Composite	ns		ns	

x - shows direction of composite difference if significant

ns - difference in means not statistically significant

1-D. LONGITUDINAL ANALYSIS OF RESULTS FOR
STUDENTS TESTED IN 1975-76 AND 1977-78:

Rationale, Data and Data Analysis

Rationale

In recent years the score for the average MCPS student has declined relative to the national norms with an increase in grade level. Several explanations for this trend can be hypothesized. The following are a few of them:

1. The norming samples at each grade level may not have been comparable in ability, and therefore student performance at different grade levels may be compared to different standards (see cautions in chapter introduction for discussion).
2. The MCPS curriculum for the elementary grades may place more emphasis on the basic skills measured by the Iowa Tests of Basic Skills (ITBS) than does the curriculum for the secondary grades.
3. Students who enter the MCPS in higher grades may be less able to perform well on the ITBS and the Cognitive Abilities Test (CAT) than students who have been tested in MCPS in both years or in 1976 only.

Comprehensive research studies would be needed to investigate fully each of these possible explanations. This cannot be done with the data currently available. Present analyses, therefore, focus solely on the issue of population differences.

The specific questions to be answered are as follows:

1. Do students who were included in the MCPS testing group in both 1976 and 1978 (Longitudinal group) score higher than students who were in the test group for only one of these test administrations (the Non-longitudinal group)? Is the pattern similar across grades? Is it similar for racial/ethnic groups?
2. How does the overall MCPS score pattern compare to that for the Longitudinal and/or Non-longitudinal subgroups?

Data

Table 1-D-1 shows the summary test results for students who were tested in MCPS in both 1976 and 1978. These are the data for the Longitudinal groups. The following group comparison are made:

- 1976 Grade 3 and 1978 Grade 5
- 1976 Grade 5 and 1978 Grade 7
- 1976 Grade 7 and 1978 Grade 9

Table 1-D-2 shows the summary test results for students who were tested in MCPS only in 1976 or 1978. These are the data for the Non-longitudinal groups.

Tables 1-D-3 to 1-D-10 show the same kind of data for White, Black, Asian, and Hispanic students. All of these tables show the mean standard age scores for the CAT, the mean grade equivalent scores for the ITBS, and the national percentile ranks for the student with these mean scores. All of the means were computed using normal curve equivalent scores and converted to the more meaningful scales which are reported (see chapter introduction).

Tables 1-D-11 and 1-D-12 summarize the data from the above score tables. Table 1-D-11 shows the number of statistically significant differences between the Longitudinal and Non-longitudinal groups. Table 1-D-12 shows the number of statistically significant score differences from 1976 to 1978 within the Longitudinal and Non-longitudinal groups.

Analysis

The scores for the Longitudinal and Non-longitudinal groups were compared to see if differences were statistically significant. Significance was tested using t-tests, with the standard error of measurement being used to compute the denominators (see chapter introduction). Significance tests were also done within each group on the differences from 1976 to 1978 to provide an answer to Question 2.

Problems of Interpretation

While the two questions that have been presented can be answered with the data in this section, the underlying reasons for the answers can only be hypothesized. For example, if the Longitudinal (L) groups had more positive score trends than the Non-longitudinal (NL) groups, the NL students tested in 1978 may not have been as bright as the NL students tested in 1976. It could also be true that in MCPS instruction in the skills measured by the CAT and the ITBS is better than the instruction students receive elsewhere. Other explanations are also possible. However, the data available provide no way of sorting out the effect of each of these explanations.

The review of score trends to answer Question 2 is tempered by the fact that the NL groups for 1976 and 1978 are completely different students. This problem and other cautions in data interpretation which apply here are discussed in the chapter introduction.

Results

Overview of Results

In making L-group and NL-group comparisons, it is important to analyze trends in performance. This overview is, therefore, provided so that general trends are not obscured by the more specific discussion of group results which follows.

Countywide, the L-groups consistently scored higher than NL-groups. From 1976 to 1978 both groups experienced an overall decline in test scores relative to national norms. Declines were approximately of the same magnitude for both groups. Among White students and Black students, results were similar to those for the county as a whole, though there was some variation by grade level.

This means, in general, that White or Black students who entered MCPS between the 1976 and 1978 test administrations performed about the same on the CAT and ITBS relative to their respective L-group as students who were tested in 1976 and left before the 1978 testing.

Hispanic and Asian students produced different results. Their L-group scored consistently higher than their NL-group and also showed improvement relative to national norms. Their NL groups experienced declines. Apparently, Hispanic and Asian students who entered MCPS between the 1976 and 1978 test administration were less able to perform well on the CAT and ITBS relative to their respective L-groups. However, as discussed below, there was some variation by grade level among Hispanic students but not among Asian students.

L-group and NL-group Comparisons (Question 1)

The countywide data show that students in the L-groups (Table 1-D-1) out-scored the students in the NL-groups (Table 1-D-2) in both 1976 and 1978. Differences were statistically significant on all 14 tests for all three comparison groups (Table 1-D-11). At all levels, the magnitude of the differences and the large size of the NL-groups (about 20% of students tested per year) depressed overall county scores by about .10 of a grade-equivalent score or up to three percentile-rank units. There were some variations in trends of racial/ethnic groups which are discussed below. Since White students make up about 86 percent of all students tested, their results were very similar to those for the county as a whole and will, therefore, not be discussed separately.

Among Black students, 94 percent of the performance differences were statistically significant, though there was a difference in the magnitude of differences in the Grades 5-7 comparison. There the gap favoring the L-group was somewhat larger in 1978 than in 1976. This suggests that relative to their L-group, Black students who entered MCPS between the Grade 5 and Grade 7 testings were not able to perform as well on the CAT and ITBS as Black students who left during that period.

The pattern for Hispanic students was somewhat inconsistent. Again the L-group scored statistically significantly higher on a great majority (88%) of the tests. However, the magnitude of differences was consistently larger in 1978 than in 1976 in the Grades 3-5 and Grades 7-9 comparisons. Relative to their L-group, newly enrolled Hispanic students were less able to perform well on the CAT and ITBS than Hispanic students who left MCPS. Grades 5-7 comparisons showed opposite results. Newly enrolled Hispanic students performed better than those who left relative to the Hispanic L-group.

Asian students were the only racial/ethnic group in which the L-groups were not ahead of NL-groups by a statistically significant amount at all grade levels in both years. In Grades 3-5 comparisons, the L-group was significantly higher in 1976 only on the ITBS Vocabulary test; they were significantly lower on the CAT Quantitative test. In the Grades 5-7 comparisons, they were significantly higher in 1976 on the CAT Verbal test and on the ITBS Vocabulary and Reading Comprehension tests. The magnitude of differences between L-groups and NL-groups was consistently larger in 1978 than in 1976 for all three comparison groups. Thus, relative to the Asian L-group, Asian students who entered MCPS between the 1976 and 1978 test administrations did not perform as well on the CAT and ITBS as the Asian students who left during that time.

Trends Within the L-groups and NL-groups (Question 2)

In keeping with countywide trends, the scores of both L-groups and NL-groups declined slightly (relative to national norms) with an increase in grade level from 1976 to 1978 (Table 1-D-12). Overall, the score trend of the L-group (13 significant increases, 22 significant decreases) was slightly better than that of the NL-group (9 significant increases, 25 significant decreases). The majority of decreases in each group occurred between Grades 5 and 7. Whether these trends actually mean poorer performance across grades cannot be determined because of the potential problem of differences in norming samples mentioned earlier.

Trends among both White and Black L-groups and NL-groups were similar to the overall county trends. It is important to note that this was not true for trends among Hispanic and Asian students, in which the majority of significant differences were increases for the L-group and decreases for the NL-group. In these cases the L-group and NL-group patterns were strikingly different.

TABLE 1-D-1

RESULTS OF STUDENTS TESTED IN MCPS IN BOTH 1976 AND 1978 - TOTAL COUNTY
(Scores reported are the national percentile rank (PR), standard age scores (SAS), and grade equivalent (GE)
of the student with the mean score¹)

Tests	Grade 3		Sig. of Diff. ³	Grade 5		Sig. of Diff.	Grade 7		Sig. of Diff.	Grade 9		Sig. of Diff.
	1976 (N=6089) ²	1978 (N=6089)		1976 (N=6608)	1978 (N=6608)		1976 (N=6974)	1978 (N=6974)		1976 (N=6974)	1978 (N=6974)	
Cognitive Abilities Test	SAS PR	SAS PR		SAS PR	SAS PR		SAS PR	SAS PR		SAS PR	SAS PR	
Verbal	111.5 76	111.5 76	++	110.0 73	108.0 69	--	107.5 68	108.5 70	++			
Quantitative	114.5 82	111.5 76	--	111.0 75	110.0 73	--	109.5 72	111.5 76	++			
Nonverbal	111.0 75	113.0 79	++	111.5 76	111.0 75	--	111.0 75	113.5 80	++			
Iowa Tests of Basic Skills	GE PR	GE PR		GE PR	GE PR		GE PR	GE PR		GE PR	GE PR	
Vocabulary	4.3 69	6.3 65	--	6.2 63	8.2 59	--	8.2 59	10.0 62	++			
Reading Comprehension	4.3 66	6.2 63	--	6.1 59	8.0 55	--	8.0 55	9.8 57	++			
Spelling	4.7 71	6.5 65	--	6.3 62	8.1 55	--	8.0 54	9.7 55				
Capitalization	4.8 75	6.9 70	--	6.5 63	8.6 62	--	8.5 61	10.3 60				
Punctuation	4.6 70	6.5 65	--	6.3 60	8.4 61		8.3 59	10.1 60				
Language Usage	4.6 67	6.8 68	++	6.5 63	8.4 59	--	8.3 58	9.9 57	--			
Map Reading	4.3 70	6.5 70		6.3 65	8.6 66		8.6 66	10.2 67	++			
Graphs and Tables	4.4 72	6.7 73	++	6.5 68	8.3 62	--	8.2 60	10.1 60				
Reference Materials	4.1 66	6.5 68	++	6.3 63	8.2 60	--	8.1 58	9.9 60	++			
Mathematics Concepts	4.3 68	6.6 73	++	6.5 69	8.4 63	--	8.4 63	10.1 57	--			
Mathematics Problem Solving	4.2 72	6.3 67	--	6.2 64	8.1 58	--	8.0 57	9.7 56	--			
Composite	4.4 73	6.4 70	--	6.3 66	8.2 62	--	8.2 62	10.0 63	++			

1. Mean is computed using Normal Curve Equivalent (NCE) scores for all scores.
2. This is the number of student tested on the ITBS Composite. The number for each subtest may be slightly larger.
3. Levels of statistical significance are based on the Standard Error of Measurement. They are indicated by the following symbols. A blank means there was not a significant difference.
 - ++ Highly significant increase, probability less than .001
 - + Significant increase, probability less than .01
 - Significant decrease, probability less than .01
 - Highly significant decrease, probability less than .001

TABLE 1-D-2

RESULTS OF STUDENTS TESTED IN MCPS IN 1976 OR 1978 - TOTAL COUNTY
(Scores reported are the national percentile rank (PR), standard age scores (SAS), and grade equivalent (GE) of the student with the mean score¹)

Tests	Grade 3		Grade 5		Sig. of 3 Diff.	Grade 5		Grade 7		Sig. of Diff.	Grade 7		Grade 9		Sig. of Diff.
	1976 N=1604) ²		1978 (N=1469)			1976 (N=1898)		1978 (N=1308)			1976 (N=2020)		1978 (N=1593)		
	SAS	PR	SAS	PR		SAS	PR	SAS	PR		SAS	PR	SAS	PR	
Cognitive Abilities Test															
Verbal	106.5	66	107.5	68	++	106.5	66	102.0	55	--	103.7	59	103.3	58	
Quantitative	111.0	75	108.0	69	--	108.5	69	104.5	61	--	104.5	61	105.3	63	++
Nonverbal	108.5	70	109.5	72	++	109.0	71	106.5	66	--	107.5	68	107.0	67	
Iowa Tests of Basic Skills	GE	PR	GE	PR		GE	PR	GE	PR		GE	PR	GE	PR	
Vocabulary	4.1	61	6.0	58	--	6.1	59	7.8	50	--	7.8	50	9.5	53	++
Reading Comprehension	4.0	58	6.0	56	--	5.9	55	7.6	47	--	7.6	47	9.3	49	++
Spelling	4.3	64	6.1	58	--	6.0	56	7.7	49	--	7.5	46	9.4	50	++
Capitalization	4.5	67	6.2	58	--	6.1	56	7.7	50	--	7.7	50	9.4	49	--
Punctuation	4.2	63	6.1	57	--	5.9	54	7.7	50	--	7.7	50	9.4	50	
Language Usage	4.2	59	6.4	61	++	6.8	69	7.7	50	--	7.6	49	9.5	51	++
Map Reading	4.1	64	6.2	63	--	6.1	61	7.9	53	--	8.1	56	9.2	50	--
Graphs and Tables	4.2	64	6.4	66		6.2	63	7.8	50	--	7.8	51	9.5	50	
Reference Materials	4.0	59	6.2	60		6.1	58	7.7	49	--	7.7	49	9.3	49	
Mathematics Concepts	3.9	59	6.4	67	++	6.2	63	7.9	54	--	7.9	52	9.5	48	--
Mathematics Problem Solving	4.1	63	6.1	61	--	6.0	59	7.7	50	--	7.6	49	9.2	47	
Composite	4.0	63	6.1	61	++	6.0	59	7.6	50	--	7.6	49	9.3	50	++

- Mean is computed using Normal Curve Equivalent (NCE) scores for all ITBS scores.
- This is the number of students tested. The number for each subtest may be slightly smaller because some students were not tested on all of the subtests.
- Levels of statistical significance are based on the Standard Error of Measure as explained in Chapter 2.
 - ++ Highly significant increase, probability less than .001
 - + Significant increase, probability less than .01
 - Significant decrease, probability less than .01
 - Highly significant decrease, probability less than .001

TABLE 1-D-3

RESULTS OF STUDENTS TESTED IN MCPS IN BOTH 1976 AND 1978 - WHITE
(Scores reported are the national percentile rank (PR), standard age scores (SAS), and grade equivalent (GE)
of the student with the mean score¹)

Tests	Grade 3		Sig. of Diff. ³	Grade 5		Sig. of Diff.	Grade 7		Sig. of Diff.	Grade 9		Sig. of Diff.
	1976 (N=5158) ²	1978 (N=5158)		1976 (N=5694)	1978 (N=5694)		1976 (N=6063)	1978 (N=6063)		1976 (N=6063)	1978 (N=6063)	
Cognitive Abilities Test	SAS PR	SAS PR		SAS PR	SAS PR		SAS PR	SAS PR		SAS PR	SAS PR	
Verbal	109.5 72	113.0 79	++	111.0 75	109.0 71	--	109.0 71	110.0 73	++			
Quantitative	115.0 83	113.0 79	--	112.0 77	110.5 74	--	110.5 74	113.0 79	++			
Nonverbal	112.0 77	114.0 81	++	112.5 78	111.5 76	--	112.0 77	114.5 82	++			
Iowa Tests of Basic Skills	GE PR	GE PR		GE PR	GE PR		GE PR	GE PR		GE PR	GE PR	
Vocabulary	4.4 72	6.4 68	--	6.4 66	8.3 62	--	8.3 62	10.1 65	++			
Reading Comprehension	4.4 69	6.4 66	--	6.3 63	8.1 58	--	8.1 58	9.9 60	++			
Spelling	4.8 73	6.6 66	--	6.4 63	8.2 57	--	8.1 56	9.8 57				
Capitalization	4.9 76	6.9 71	--	6.6 65	8.6 63	--	8.6 63	10.5 63				
Punctuation	4.7 72	6.7 68	--	6.4 63	8.6 63	--	8.5 62	10.2 62				
Language Usage	4.7 69	6.9 70	++	6.7 67	8.6 62	--	8.5 61	10.1 59	--			
Map Reading	4.4 73	6.6 73		6.4 68	8.7 68		8.8 69	10.3 70	++			
Graphs and Tables	4.5 74	6.8 76	++	6.5 70	8.4 64	--	8.4 63	10.3 63				
Reference Materials	4.2 69	6.6 70	++	6.4 65	8.4 62	--	8.3 61	10.1 63	++			
Mathematics Concepts	4.4 71	6.8 76	++	6.6 71	8.5 66	--	8.5 66	10.3 60				
Mathematics Problem Solving	4.3 74	6.3 70	--	6.3 67	8.2 61	--	8.1 60	9.8 59				
Composite	4.5 76	6.6 73	--	6.4 70	8.4 65	--	8.4 65	10.1 66	++			

1. Mean is computed using Normal Curve Equivalent (NCE) scores for all scores.
2. This is the number of student tested on the ITBS Composite. The number for each subtest may be slightly larger.
3. Levels of statistical significance are based on the Standard Error of Measurement. They are indicated by the following symbols. A blank means there was not a significant difference.
 - ++ Highly significant increase, probability less than .001
 - + Significant increase, probability less than .01
 - Significant decrease, probability less than .01
 - Highly significant decrease, probability less than .001

TABLE 1-D-4

RESULTS OF STUDENTS TESTED IN MCPS IN 1976 OR 1978 - WHITE
(Scores reported are the national percentile rank (PR), standard age scores (SAS), and grade equivalent (GE)
of the student with the mean score¹)

Tests	Grade 3		Grade 5		Sig. of Diff.	Grade 5		Grade 7		Sig. of Diff.	Grade 7		Grade 9		Sig. of Diff.
	1976 (N=1325) ²		1978 (N=1103)			1976 (N=1603)		1978 (N=984)			1976 (N=1736)		1978 (N=1265)		
Cognitive Abilities Test	SAS	PR	SAS	PR		SAS	PR	SAS	PR		SAS	PR	SAS	PR	
Verbal	108.5	70	111.0	75	++	108.5	70	105.3	63	--	105.3	63	105.7	64	++
Quantitative	112.0	77	110.0	73	--	109.5	72	106.5	66	--	105.7	64	107.0	67	++
Nonverbal	109.5	72	111.5	76	++	110.0	73	109.0	71	--	109.0	71	108.5	70	-
Iowa Tests of Basic Skills	GE	PR	GE	PR		GE	PR	GE	PR		GE	PR	GE	PR	
Vocabulary	4.2	65	6.3	65		6.2	63	8.1	57	--	7.9	53	9.9	60	++
Reading Comprehension	4.2	62	6.3	64	++	6.0	58	7.9	53	--	7.7	50	9.6	54	++
Spelling	4.4	65	6.4	63	--	6.1	58	7.9	52	--	7.6	48	9.5	52	++
Capitalization	4.6	70	6.5	63	--	6.2	59	8.0	54	--	7.9	53	9.6	51	--
Punctuation	4.3	65	6.4	63	--	6.0	56	8.1	55		7.9	52	9.6	52	
Language Usage	4.4	63	6.8	68	++	6.4	62	8.2	57	--	7.9	52	9.8	55	++
Map Reading	4.3	69	6.4	69		6.2	63	8.3	60	--	8.3	60	9.4	53	--
Graphs and Tables	4.3	68	6.6	72	++	6.4	66	8.1	57	--	7.9	54	9.7	54	
Reference Materials	4.0	62	6.4	65	++	6.2	60	7.9	53	--	7.8	51	9.4	51	
Mathematics Concepts	4.1	63	6.6	73	++	6.4	67	8.2	60	--	8.0	56	9.6	50	--
Mathematics Problem Solving	4.1	67	6.2	66		6.1	62	7.9	54	--	7.8	51	9.3	50	
Composite	4.2	68	6.4	69		6.2	63	8.0	57	--	7.8	53	9.6	55	++

1. Mean is computed using Normal Curve Equivalent (NCE) scores for all ITBS scores.
2. This is the number of students tested. The number for each subtest may be slightly smaller because some students were not tested on all of the subtests.
3. Levels of statistical significance are based on the Standard Error of Measure as explained in Chapter 2.
 - ++ Highly significant increase, probability less than .001
 - + Significant increase, probability less than .01
 - Significant decrease, probability less than .01
 - Highly significant decrease, probability less than .001

TABLE 1-D-5

RESULTS OF STUDENTS TESTED IN MCPS IN BOTH 1976 AND 1978 - BLACK
(Scores reported are the national percentile rank (PR), standard age scores (SAS), and grade equivalent (GE)
of the student with the median score)

Tests	Grade 3		Grade 5		Sig. of Diff.	Grade 5		Grade 7		Sig. of Diff.	Grade 7		Grade 9		Sig. of Diff.
	1976 (N=562) ²	1978 (N=562)	1976 (N= 561)	1978 (N= 561)		1976 (N= 554)	1978 (N= 554)								
Cognitive Abilities Test	SAS	PR	SAS	PR		SAS	PR	SAS	PR		SAS	PR	SAS	PR	
Verbal	101.0	52	100.5	51		97	43	95.5	39	- -	95.5	37	95.0	38	++
Quantitative	99.5	49	102.5	56	- -	98	45	96.3	41	- -	94.7	37	96.7	42	++
Nonverbal	103.0	57	100.0	50	++	100	50	100.5	51		97.0	43	100.5	51	++
Iowa Tests of Basic Skills	GE	PR	GE	PR		GE	PR	GE	PR		GE	PR	GE	PR	
Voabulary	3.3	37	5.5	44	- -	5.0	32	6.7	30		6.5	27	8.2	29	+
Reading Comprehension	3.2	36	5.3	38	- -	4.8	28	6.4	27		6.4	26	7.8	27	
Spelling	3.7	48	6.1	57	- -	5.2	38	6.6	34	- -	6.6	34	8.2	35	
Capitalization	3.6	48	6.1	56	- -	5.1	37	6.8	37		6.6	34	8.4	35	
Punctuation	3.4	42	5.8	50	- -	5.0	34	6.6	34		6.5	32	8.4	36	++
Language Usage	3.4	42	5.5	45	- -	4.9	35	6.4	32	- -	6.4	31	7.8	30	
Map Reading	3.5	41	5.4	41		5.2	35	6.9	36		6.7	32	8.1	32	
Graphs and Tables	3.5	44	5.5	46		5.2	37	6.7	32	- -	6.5	29	8.2	30	
Reference Materials	3.5	44	5.4	41	++	5.2	36	6.9	35		6.6	30	8.2	31	
Mathematics Concepts	3.5	42	5.4	41		5.1	33	6.8	30	- -	6.6	27	7.9	25	
Mathematics Problem Solving	3.3	37	5.6	46	- -	5.1	33	6.5	28	++	6.4	26	7.9	27	
Composite	3.3	38	5.4	44	++	4.9	30	6.5	28	- -	6.4	26	7.9	27	++

1. Mean is computed using Normal Curve Equivalent (NCE) scores for all scores.
2. This is the number of student tested on the ITBS Composite. The number for each subtest may be slightly larger.
3. Levels of statistical significance are based on the Standard Error of Measurement. They are indicated by the following symbols. A blank means there was not a significant difference.
 - ++ Highly significant increase, probability less than .001
 - + Significant increase, probability less than .01
 - Significant decrease, probability less than .01
 - Highly significant decrease, probability less than .001

TABLE 1-D-6

RESULTS OF STUDENTS TESTED IN MCPS IN 1976 OR 1978 - BLACK
(Scores reported are the national percentile rank (PR), standard age scores (SAS), and grade equivalent (GE) of the student with the mean score¹)

Tests	Grade 3		Grade 5		Sig. of Diff.	Grade 5		Grade 7		Sig. of Diff.	Grade 7		Grade 9		Sig. of Diff.
	1976 (N=163) ²		1978 (N=217)			1976 (N=170)		1978 (N=201)			1976 (N=186)		1978 (N=178)		
	SAS	PR	SAS	PR		SAS	PR	SAS	PR		SAS	PR	SAS	PR	
Cognitive Abilities Test															
Verbal	94.7	37	95.0	38		96.0	40	90.0	27	- -	88.0	23	88.5	24	
Quantitative	98.7	47	94.7	37	- -	94.7	37	90.5	28	- -	88.5	24	90.5	28	+ +
Nonverbal	96.0	40	96.7	42		97.0	43	94.3	36	- -	89.0	25	94.3	36	+ +
Iowa Tests of Basic Skills															
	GE	PR	GE	PR		GE	PR	GE	PR		GE	PR	GE	PR	
Vocabulary	2.9	28	5.0	32	+	5.0	33	6.1	22	- -	6.1	21	7.7	22	
Reading Comprehension	2.9	26	4.8	27		4.9	29	6.1	21	- -	5.8	18	7.0	18	
Spelling	3.4	42	5.2	38	-	5.1	36	6.1	27	- -	5.9	24	7.3	24	
Capitalization	3.3	39	4.8	30	- -	4.9	31	5.9	24	- -	5.8	22	7.4	24	
Punctuation	3.2	36	4.9	33		4.8	30	6.1	27		5.7	22	7.6	27	+ +
Language Usage	3.0	33	4.9	34		5.0	36	6.0	27	- -	5.7	23	7.3	25	
Map Reading	3.1	30	5.1	33		5.0	32	6.2	24	- -	6.2	24	7.0	18	- -
Graphs and Tables	3.3	38	5.2	37		5.1	35	5.9	21	- -	6.0	22	7.6	24	
Reference Materials	3.2	33	5.1	33		5.0	31	6.2	24	- -	5.8	18	7.3	21	+
Mathematics Concepts	3.1	28	5.1	33	+ +	4.8	27	6.4	23		6.1	17	7.4	18	
Mathematics Problem Solving	3.2	32	5.0	31		5.0	30	6.2	23	- -	6.0	20	7.3	21	
Composite	3.0	28	4.8	27	-	4.8	27	6.0	18	- -	5.8	14	7.2	16	+ +

1. Mean is computed using Normal Curve Equivalent (NCE) scores for all ITBS scores.
2. This is the number of students tested. The number for each subtest may be slightly smaller because some students were not tested on all of the subtests.
3. Levels of statistical significance are based on the Standard Error of Measure as explained in Chapter 2.
 - ++ Highly significant increase, probability less than .001
 - + Significant increase, probability less than .01
 - Significant decrease, probability less than .01
 - Highly significant decrease, probability less than .001

TABLE 1-D-7

RESULTS OF STUDENTS TESTED IN MCPS IN BOTH 1976 AND 1978 - ASIAN
(Scores reported are the national percentile rank (PR), standard age scores (SAS), and grade equivalent (GE)
of the student with the mean score¹)

Tests	Grade 3		Sig. of Diff.	Grade 5		Sig. of Diff.	Grade 7		Sig. of Diff.	Grade 9		Sig. of Diff.
	1976 (N=205) ²	1978 (N=205)		1976 (N= 177)	1978 (N= 177)		1976 (N= 167)	1978 (N=167)		1976 (N= 167)	1978 (N=167)	
Cognitive Abilities Test	SAS PR	SAS PR		SAS PR	SAS PR		SAS PR	SAS PR		SAS PR	SAS PR	
Verbal	114.5 82	116.0 84	++	112.0 77	111.5 76		111.0 75	113.5 80	++			
Quantitative	120.0 89	119.0 88	+	117.0 86	119.0 88		119.0 88	121.0 91	++			
Nonverbal	116.5 85	119.0 88	++	117.0 86	118.0 87		118.0 87	121.0 91	++			
Iowa Tests of Basic Skills	GE PR	GE PR		GE PR	GE PR		GE PR	GE PR		GE PR	GE PR	
Voabulary	4.4 73	6.6 72		6.4 67	8.6 59		8.6 69	10.7 77	++			
Reading Comprehension	4.5 70	6.7 73	+	6.5 68	8.5 66		8.5 65	10.4 70	+			
Spelling	5.4 84	7.5 82		7.5 79	9.6 80		9.3 76	11.3 79	+			
Capitalization	5.3 84	7.7 82		7.2 75	9.7 77		9.8 79	11.7 79				
Punctuation	5.1 80	7.4 79		7.2 76	9.6 79		9.4 76	11.3 79				
Language Usage	4.7 70	7.0 72		6.6 65	8.7 64		8.8 66	10.9 70				
Map Reading	4.5 76	7.0 81	+	6.8 77	9.4 82	+	9.4 82	11.1 83				
Graphs and Tables	4.7 79	7.2 82	+	7.0 79	8.9 73	+	8.9 73	10.5 73				
Reference Materials	4.5 78	7.1 79		6.9 75	9.1 75		9.2 76	11.0 77				
Mathematics Concepts	4.6 79	7.3 86	++	7.1 83	9.5 83		9.6 84	11.4 79	--			
Mathematics Problem Solving	4.5 83	6.9 82		6.7 79	8.8 76		8.8 76	10.6 76				
Composite	4.7 81	7.1 83	++	6.8 78	9.0 77		9.0 77	10.9 80	++			

- Mean is computed using Normal Curve Equivalent (NCE) scores for all scores.
- This is the number of student tested on the ITBS Composite. The number for each subtest may be slightly larger.
- Levels of statistical significance are based on the Standard Error of Measurement. They are indicated by the following symbols. A blank means there was not a significant difference.
 - ++ Highly significant increase, probability less than .001
 - + Significant increase, probability less than .01
 - Significant decrease, probability less than .01
 - Highly significant decrease, probability less than .001

TABLE 1-D- 8

RESULTS OF STUDENTS TESTED IN MCPS IN 1976 OR 1978 - ASIAN
(Scores reported are the national percentile rank (PR), standard age scores (SAS), and grade equivalent (GE)
of the student with the mean score¹)

Tests	Grade 3		Grade 5		Sig. of Diff.	Grade 5		Grade 7		Sig. of Diff.	Grade 7		Grade 9		Sig. of Diff.
	1976 (N=33) ²		1978 (N=86)			1976 (N=45)		1978 (N=61)			1976 (N=21)		1978 (N=83)		
Cognitive Abilities Test	SAS	PR	SAS	PR		SAS	PR	SAS	PR		SAS	PR	SAS	PR	
Verbal	113.0	79	101.7	54	--	107.0	67	103.0	57	--	104.0	60	95.5	39	--
Quantitative	123.0	92	113.0	79	--	119.0	88	113.0	79	--	113.5	80	112.0	77	--
Nonverbal	116.5	85	116.0	84	--	118.0	87	113.5	80	--	113.5	80	112.5	78	--
Iowa Tests of Basic Skills	GE	PR	GE	PR		GE	PR	GE	PR		GE	PR	GE	PR	
Vocabulary	4.1	63	5.7	48	--	6.2	61	7.6	46	--	7.5	44	8.8	38	--
Reading Comprehension	4.5	71	5.7	50	--	6.3	63	7.5	46	--	8.0	56	8.6	38	--
Spelling	5.2	81	6.5	65	--	7.1	75	8.3	59	--	8.8	68	10.0	59	--
Capitalization	5.3	83	6.9	70	--	7.0	72	8.3	58	--	8.8	65	9.8	54	--
Punctuation	5.1	79	6.6	67	--	7.2	76	8.4	60	--	9.6	79	10.2	62	--
Language Usage	4.5	66	5.7	49	--	6.4	61	7.4	45	--	7.4	46	9.5	52	--
Map Reading	4.3	70	6.4	67	--	6.6	73	8.6	66	--	8.3	60	9.1	49	--
Graphs and Tables	4.6	76	6.6	71	--	6.9	78	8.2	60	--	8.4	63	9.4	48	--
Reference Materials	4.5	79	6.3	64	--	6.7	71	8.2	59	--	8.2	60	9.4	50	+
Mathematics Concepts	4.6	79	6.8	77	--	7.0	81	9.1	76	--	8.9	73	10.5	64	--
Mathematics Problem Solving	4.5	83	6.4	73	--	6.4	74	8.3	64	--	8.6	71	9.6	55	--
Composite	4.5	77	6.2	63	--	6.6	73	7.9	56	--	8.1	60	9.3	50	--

1. Mean is computed using Normal Curve Equivalent (NCE) scores for all ITBS scores.
2. This is the number of students tested. The number for each subtest may be slightly smaller because some students were not tested on all of the subtests.
3. Levels of statistical significance are based on the Standard Error of Measure as explained in Chapter 2.
 - ++ Highly significant increase, probability less than .001
 - + Significant increase, probability less than .01
 - Significant decrease, probability less than .01
 - Highly significant decrease, probability less than .001

TABLE 1-D-9

RESULTS OF STUDENTS TESTED IN MCPS IN BOTH 1976 AND 1978 - HISPANIC
(Scores reported are national percentile rank (PR), standard age scores (SAS), and grade equivalent (GE)
of the student with the mean score¹)

Tests	Grade 3		Grade 5		Sig. of 3 Diff.	Grade 5		Grade 7		Sig. of Diff.	Grade 7		Grade 9		Sig. of Diff.
	1976 (N=143) ²		1978 (N=143)			1976 (N=142)		1978 (N=142)			1976 (N=157)		1978 (N=157)		
Cognitive Abilities Test	SAS	PR	SAS	PR		SAS	PR	SAS	PR		SAS	PR	SAS	PR	
Verbal	105.5	63	106.5	66	+	105.0	62	103.7	59		101.0	52	102.0	55	
Quantitative	109.5	72	105.7	64	-	106.5	66	105.7	64		102.5	56	105.3	63	+
Nonverbal	106.0	65	110.0	73	+	109.5	72	108.5	70		108.5	70	111.5	76	+
Iowa Tests of Basic Skills	GE	PR	GE	PR		GE	PR	GE	PR		GE	PR	GE	PR	
Vocabulary	3.9	54	5.8	52		5.8	52	7.7	49		7.7	48	9.5	51	
Reading Comprehension	3.8	52	5.7	50		5.6	47	7.6	48		7.3	43	9.0	45	
Spelling	4.3	64	6.2	60	-	6.1	58	7.9	53	-	7.6	48	9.4	50	
Capitalization	4.4	65	6.3	60	-	6.1	56	8.1	58		7.8	51	9.6	51	
Punctuation	4.3	65	6.4	62		5.9	54	8.2	57		7.7	50	9.6	53	
Language Usage	4.1	57	6.2	58		5.7	50	7.9	52		7.7	49	9.4	50	
Map Reading	4.0	60	6.0	59		6.0	58	8.4	61		8.2	58	9.7	59	
Graphs and Tables	4.2	63	6.1	59		6.1	59	7.7	49	+	7.6	48	9.2	45	
Reference Materials	3.9	56	6.2	61	+	5.9	53	8.0	56		7.7	49	9.3	49	
Mathematics Concepts	3.9	54	6.2	61	+	6.1	59	8.0	55		7.6	47	9.4	47	
Mathematics Problem Solving	4.0	62	6.0	58		5.9	55	7.7	50	+	7.5	44	8.9	42	
Composite	4.0	60	6.0	59		5.9	55	7.8	54		7.6	50	9.3	50	

1. Mean is computed using Normal Curve Equivalent (NCE) scores for all scores.
2. This is the number of student tested on the ITBS Composite. The number for each subtest may be slightly larger.
3. Levels of statistical significance are based on the Standard Error of Measurement. They are indicated by the following symbols. A blank means there was not a significant difference.
 - ++ Highly significant increase, probability less than .001
 - + Significant increase, probability less than .01
 - Significant decrease, probability less than .01
 - Highly significant decrease, probability less than .001

TABLE 1-D-10

RESULTS OF STUDENTS TESTED IN MCPS IN 1976 OR 1978 - HISPANIC
(Scores rerorted are the national percentile rank (PR), standard age scores (SAS), and grade equivalent (GE) of the student with the mean score¹)

Tests	Grade 3		Grade 5		Sig. of Diff.	Grade 5		Grade 7		Sig. of Diff.	Grade 7		Grade 9		Sig. of Diff.
	1976 (N=51) ²		1978 (N=60)			1976 (N=52)		1978 (N=58)			1976 (N=44)		1978 (N=62)		
Cognitive Abilities Test	SAS	PR	SAS	PR		SAS	PR	SAS	PR		SAS	PR	SAS	PR	
Verbal	98.3	46	95.0	38	- -	98.3	46	96.3	41		95.5	39	93.5	34	-
Quantitative	105.0	62	100.0	50		102.5	56	103.7	59		99.0	48	100.0	50	
Nonverbal	105.0	62	106.5	66	+	104.5	61	105.3	63		104.0	60	103.5	59	
Iowa Tests of Basic Skills	GE	PR	GE	PR		GE	PR	GE	PR		GE	PR	GE	PR	
Vocabulary	3.5	45	5.1	34	- -	5.5	44	7.4	43		7.2	39	8.3	31	- -
Reading Comprehension	3.4	42	5.0	31	- -	5.3	38	7.1	39		7.0	37	7.8	27	- -
Spelling	3.8	52	5.1	36	- -	5.5	45	7.1	41		7.3	43	8.4	38	
Capitalization	4.2	61	5.1	37	- -	5.2	39	7.7	49	+	7.2	43	8.6	37	
Punctuation	3.8	52	5.2	39	- -	5.5	45	7.6	48		7.0	39	9.3	47	+
Language Usage	3.7	48	5.0	37	- -	5.6	47	7.2	43		7.0	40	8.6	40	
Map Reading	3.7	49	5.3	38	- -	6.5	45	7.7	50		7.7	50	8.5	38	- -
Graphs and Tables	3.9	54	5.5	43	- -	5.5	45	7.4	43		7.0	37	8.6	35	
Reference Materials	3.5	44	5.2	37	- -	5.5	44	7.5	45		7.3	41	8.2	31	- -
Mathematics Concepts	3.6	47	5.4	42		5.4	42	7.9	53	++	7.4	43	8.6	35	-
Mathematics Problem Solving	3.6	45	5.3	38		5.6	46	7.4	43		7.3	41	8.1	30	- -
Composite	3.6	48	5.1	34	- -	5.3	40	7.4	45	++	7.0	37	8.2	31	- -

1. Mean is computed using Normal Curve Equivalent (NCE) scores for all ITBS scores.
2. This is the number of students tested. The number for each subtest may be slightly smaller because some students were not tested on all of the subtests.
3. Levels of statistical significance are based on the Standard Error of Measure as explained in Chapter 2.

111 ++ Highly significant increase, probability less than .001
 + Significant increase, probability less than .01
 - Significant decrease, probability less than .01
 -- Highly significant decrease, probability less than .001

TABLE 1-D-11

Number of Statistically Significant Differences Between
Longitudinal and Nonlongitudinal Groups*

Racial Group	1976 Grade 3	1978 Grade 5	1976 Grade 5	1978 Grade 7	1976 Grade 7	1978 Grade 9
White	14	14	14	14	14	14
Black	14	14	9	14	14	14
Asian	1**	14	3	14	11	14
Hispanic	13	14	13	11	9	14
County	14	14	14	14	14	14

* In all cases the Longitudinal group is higher. There are 14 tests for each comparison.

** The difference on the CAT Quantitative was significant in favor of the nonlongitudinal group.

TABLE 1-D-12

Number of Significant Increases (Inc) and Decreases (Dec) for
Longitudinal and Nonlongitudinal Groups

	Grades 3-5				Grades 5-7				Grades 7-9				Totals			
	Long.		Nonlong.		Long.		Nonlong.		Long.		Nonlong.		Long.		Nonlong.	
	Inc.	Dec.	Inc.	Dec.	Inc.	Dec.	Inc.	Dec.	Inc.	Dec.	Inc.	Dec.	Inc.	Dec.	Inc.	Dec.
White	6	7	7	4		12		13	7	3	6	4	13	22	13	21
Black	2	8	2	3	1	6		12	6		4	1	9	14	6	16
Asian	7			10	2			12	6	1	1	8	15	1	1	30
Hispanic	4	3	1	10	2	1	2		2		1	7	8	4	4	17
County	6	7	4	8		12		14	7	3	5	3	13	22	9	25

1-E. REPORT ON STUDENTS ACHIEVING COMPETENCY
ON THE MARYLAND FUNCTIONAL READING TEST
COUNTYWIDE AND BY SEX AND
BY RACIAL/ETHNIC CATEGORY

Rationale, Data, and Data Analysis

Rationale

The Maryland Functional Reading Test (MFRT) has been administered in MCPS since 1975. The results provide a measure of how well students have attained the minimal literacy skills measured by the MFRT. Starting with the 1978-79 ninth grade, the MFRT becomes a graduation requirement.⁷ Students will be expected to answer at least 80 percent of the questions correctly to graduate. Thus the results will become even more meaningful in the future. The following questions are to be addressed in this section:

1. Were the performance trends in MCPS consistent with statewide trends?
2. Were there differences in performance by sex?
3. Were there performance differences by racial/ethnic category?

Data

Table 1-E-1 shows the percent of students in MCPS and in Maryland who achieved the required 80 percent competency level on the MFRT. Data are presented for Grades 7 and 11 for the three years the test has been administered. Students in Grade 9 were tested for the first time in 1977.

Table 1-E-2 shows the percent of MCPS students achieving the 80 percent competency score in 1977 by objective category, total test, grade, and sex. Table 1-E-3 shows the percent achieving competency in 1977 by objective category, total test, grade, and selected racial/ethnic group. Sex and racial/ethnic breakdowns for the state are not available.

Analysis

No formal statistical analysis has been performed.

Cautions in Data Interpretation

The Maryland State Department of Education has established a competency score of 80 percent correct responses on each category of objectives and/or on the total test. For reasons discussed in the chapter introduction, the 80 percent competency score may not have the same meaning across forms or grades.

⁷Systemwide testing in Grade 11 will not be continued. However, a student who fails to achieve competence in Grade 9 will be given an opportunity to take the test in subsequent years in order to meet the graduation requirement.

Percentages reported in the tables represent the percent of students who achieved the 80 percent competency score. They do not represent the average percent of correct answers on the test or its objective categories.

Other cautions discussed in the introduction to the chapter apply to this section.

Results

County and State by Year (Question 1)

Two general patterns are clear in Table 1-E-1. First, in both the state as a whole and in MCPS the percentage of students achieving the 80 percent competency score on the MFRT and on each of its objective categories has increased every year the test has been administered in Grades 7 and 11. A greater percentage of MCPS students have achieved competency each year than have students statewide.

The second general trend is best observed in 1977, the first year in which Grade 9 was tested. The percentage of both state and MCPS students achieving competence on the total test and on three objective categories was lowest in Grade 7, slightly higher in Grade 9, and highest in Grade 11. The one exception was the Locating Information from References category. There, the proportion of students achieving competence was higher in Grade 7 than in Grade 9; in Grade 11, however, the proportion was greater than in Grade 7. This anomaly can probably be explained in large part by differences in that category between the lower-level and higher-level forms of the test.

By individual grade, MCPS students tended to follow statewide trends. In Grade 7 the highest percentage of students achieved competency in the Following Directions category, and the lowest proportion did so in the categories Understanding Forms and Gaining Information. However, in each of the three years 15 percent more MCPS Grade 7 students achieved competency on the total test than did so statewide.

In Grade 9 MCPS also had about 15 percent more students achieving total-test competency than did so statewide. Again in both the state and the county, Grade 9 students achieved competency in the highest proportions in the Following Directions category. Locating Information was the category in which the smallest proportion of students in both state and county achieved the competency score.

The proportion of Grade 11 students in MCPS who achieved competency on the total test has been quite high for three consecutive years. The difference between the proportion of MCPS Grade 11 students and all Grade 11 students in the state who achieved competency on the total test has decreased each year from 10 percent in 1975, to 7 percent in 1976, and to 6 percent in 1977. This has been caused by an increase in the proportion of students achieving competency statewide. In both state and county, the Following Directions category has again been the one in which the highest proportion of students achieved competency. As in Grade 9, Locating Information is the category in which the smallest proportion of MCPS Grade 11 students achieved competency.

Results by Sex, 1977 (Question 2)

Table 1-E-2 shows the percent by sex of MCPS students achieving competency on the MFRT in 1977 by total test, objective categories, and grade. Two trends are apparent. A higher proportion of females than of males achieved 80 percent competency scores on the total test and in all objective categories at all grade levels. Second, the differences in proportions between males and females decreased by increasing grade.

In Grade 7, 7 percent more females than males achieved competency scores on the total test. The greatest disparity in proportions (9%) was in the Understanding Forms category. In Grade 9, again 7 percent more females than males achieved competency on the total test. The greatest disparity was once more in the Understanding Forms category. In Grade 11, more than 90 percent of both groups achieved total-test competency and competency in all objective categories. Only 3 percent more females than males in Grade 11 achieved competency on the total test. Gaining Information was the category in which there was the greatest difference in proportions, but the disparity was only 4 percent in favor of females.

Results by Racial/Ethnic Group (Question 3)

Table 1-E-3 shows the percent of MCPS students achieving competency on the MFRT in 1977 by total test, objective categories, and grade for Asian, Black, Hispanic, and White students. It should be noted that White students make up the vast majority of all MCPS students tested. Black students constitute the largest minority group but represent only between 8 to 10 percent of the total. Asian students account for 3 percent per grade and Hispanics for another 3 percent.

Perhaps the first observable general trend in Table 1-E-3 is that in all objective categories and on the total test, Asian, Hispanic, and White students achieved competency in greater proportions at all grade levels than did all students statewide. Smaller proportions of MCPS Black students achieved competency than did students statewide by total test and objective categories at all grade levels. However, the disparity between the percentages of Black students achieving competency and statewide percentages decreased with increasing grade level. In Grade 7, the difference for Blacks on the total test was 9 percent. In Grade 9, the difference for Black students on the total test was 8 percent. In Grade 11, however, Black students were below the statewide percentages of students achieving competency on the total test by only 3 percent.

Another observable general trend in Table 1-E-3 is the rank-ordering of groups by proportions of students achieving competency. In both Grades 7 and 9, on all objective categories and on the total test, Asian students achieved competency in the greatest proportions. White students were next highest, followed in decreasing proportions by Hispanics and Blacks. This is the same trend that was found on the Iowa Tests of Basic Skills and the Tests of Academic Progress.

In Grade 11, in which very high proportions of all students statewide and in the county achieved competency, the rank-order pattern was different than that prevailing in Grades 7 and 9. White students achieved competency

in the greatest proportions on all objective categories and the total test. On the total test and in the Gaining Information category, Hispanic students were second in proportions achieving competency. Asian students held second rank in the categories Understanding Forms and Following Directions. Asian and Hispanic students shared second place in the category Locating Information. On the total test and in all categories, Black students in Grade 11 achieved competency in the lowest proportions. However, it should be noted that except in the category Locating Information, at least 80 percent of the Grade 11 Black students achieved competency on the total test and on the objective categories.

It has been mentioned previously that there is both a statewide and county trend for the proportion of students achieving competency to increase with increasing grade level. Since White students make up the majority of those tested, it is to be expected that this trend can be observed among that group in MCPS in 1977 (see chapter introduction). A similar pattern prevails among MCPS Black and Hispanic students. Proportions of these two groups who achieve competency are higher in Grade 9, which can probably be attributed to differences in the test forms. The pattern does not, however, hold up for Asians. The proportions of these students who achieve competency by total test or objective categories in Grade 11 are either lower than or the same as the Grade 7 proportions. Since the highest proportion of Asian students who achieve competency is observed in Grade 9, where the upper-level form of the test is administered, the phenomenon cannot be explained by test difficulty. The most likely explanation, particularly in view of the high proportion of Asian students who achieve competency at all levels, is the varying composition of groups at each level (see chapter introduction).

Findings Requiring Further Study

Two general trends have been observed: (1) an increasingly large percentage of students have attained the 80 percent competency score on the MFRT by total test and by objectives in each successive year of the test's administration and (2) the proportion of students achieving competency increases by grade level. These trend data are, however, based on different groups of students. It would therefore be useful to conduct longitudinal studies to determine if the observed trends are also true when the performance of individuals and groups is traced over time. At present, the data for such an analysis are not available.

The Locating Information category is the one in which both Grade 9 and Grade 11 students statewide and in MCPS achieve competency in the smallest proportion (though in MCPS proportions are still high). It would be desirable to attempt to discover whether this can be attributed to instructional practices or to the structure of the test itself.

Continuing investigations must be conducted, particularly at the elementary and junior high school levels, to identify the reasons for the disparities between proportions of MCPS Black students who achieve competency and the proportions of other groups. Investigation should focus on reasons for success as well as for failure. The majority of Black students do achieve competency in Grade 7 and Grade 9. In Grade 11, the proportion of Black students who achieve competency is rather high: 78 percent to 93 percent

by objective categories and 86 percent on the total test. Again longitudinal studies of performance of individuals and groups should be undertaken to identify trends which cannot be observed when different groups of students are tested and compared across years.

TABLE 1-E-1
PERCENT OF STUDENTS ACHIEVING COMPETENCY¹ ON THE MARYLAND
FUNCTIONAL READING SECTIONS TOTAL TEST

		Locating Information		Understanding Forms		Gaining Information		Following Directions		Total Test		Number Tested	
		MCPS	State	MCPS	State	MCPS	State	MCPS	State	MCPS	State	MCPS	State
Grade 7	1975	82	69	75	62	73	56	85	72	80	65	9,029	67,384
	1976	85	71	80	67	80	65	88	78	84	69	9,062	67,668
	1977	88	73	84	69	83	67	92	80	87	72	8,340	64,248
Grade 9	1975									Not tested			
	1976									Not tested			
	1977	83	64	86	72	89	76	94	84	89	74	9,384	67,160
Grade 11	1975	84	70	89	80	89	81	91	84	90	80	9,006	54,844
	1976	91	80	93	87	95	89	96	92	94	87	8,996	56,772
	1977	92	82	94	89	96	91	97	94	95	89	9,153	57,180

1. The level set by the Maryland State Department of Education is 80% correct on each section and the total test.

TABLE 1-E-2

PERCENT OF MCPS STUDENTS ACHIEVING COMPETENCY
ON THE MFRT BY OBJECTIVE CATEGORY, GRADE, AND SEX

Grade	Locate Info.		Forms		Gain Info.		Follow Direct		Tot. Test		Numbers	
	M	F	M	F	M	F	M	F	M	F	M	F
Grade 7	84	91	79	88	78	84	89	92	84	91	4,122	4,208
Grade 9	80	85	82	90	86	92	91	96	85	92	4,703	4,658
Grade 11	91	93	93	96	94	98	96	99	94	97	4,593	4,514

TABLE 1-E-3

PERCENT OF MCPS STUDENTS ACHIEVING COMPETENCY

ON THE MFRT BY OBJECTIVE CATEGORY, GRADE, AND RACIAL/ETHNIC GROUP

	Locate Info.	Forms	Gain Info.	Follow Dir.	Total Test	Number Tested	Percent of MCPS Tested
<u>Grade 7</u>							
State	73	69	67	80	72		
MCPS	88	84	83	92	87	8,287	100%
Asian	94	91	91	95	96	247	3%
Black	69	61	57	74	63	816	10%
Hispanic	82	78	68	88	84	215	3%
White	90	87	84	92	90	7,009	84%
<u>Grade 9</u>							
State	64	72	76	84	74		
MCPS	83	86	89	94	89	9,319	100%
Asian	91	93	93	98	95	260	3%
Black	57	61	71	80	66	819	9%
Hispanic	76	77	84	86	78	251	3%
White	85	88	91	95	91	7,989	85%
<u>Grade 11</u>							
State	82	89	91	94	89		
MCPS	82	94	96	97	95	9,078	100%
Asian	91	93	91	94	93	223	2.5%
Black	78	83	89	93	86	726	8%
Hispanic	91	92	95	96	95	226	2.5%
White	93	96	96	98	96	7,903	87%

1-F. MCPS STUDENT PERFORMANCE ON COLLEGE ENTRANCE EXAMINATION BOARD TESTS

Rationale, Data, and Data Analysis

Rationale

One indication of how well the school system prepares students for college can be found in the results of the College Entrance Examination Board (CEEB) tests, the Scholastic Aptitude Tests (SAT), the CEEB Achievement Tests (CEEB), and the Advanced Placement Examinations (APE). The SAT are taken by approximately 65 percent of the graduates of county schools. The CEEB Achievement Tests and the APE are taken by less than 20 percent, but these are generally the top students in each graduating class. The results from these tests provide a good measure of how well county students are prepared for college. Performance on these tests may be a more accurate indicator of the skills of Grade 11 students than the Tests of Academic Progress (TAP) administered in Grade 11 because the CEEB tests are specifically designed to measure preparation for and the ability to do college work. Also, because of the importance of the results to individual students, they are likely to be better motivated on the CEEB tests.

Data

Table 1-F-1 contains the SAT results for the last two years. It shows the MCPS, Maryland, and national mean scores; and the numbers tested for males, females, and the total county. Also shown are the percent of the group tested for each sex and the percent of MCPS enrollment tested. Table 1-F-2 summarizes the SAT score trends for 1977-78 and the differences between MCPS and national means. Table 1-F-3 shows the MCPS and national mean scores for each of the CEEB achievement tests. Table 1-F-4 summarizes the trends from 1977 to 1978 and the differences between the MCPS and the national means. Table 1-F-5 shows the APE results as the percent of students taking each test who attained each score on the five-point scale. Also provided are the numbers tested on each test and the cumulative percents of students scoring at each point on the scale. National APE results for 1978 are presented with the MCPS total.

Analysis

The trends of scores for MCPS students are studied on these tests as are the differences between MCPS and national results. No formal statistical tests are performed.

Cautions in Data Interpretation

Not all graduates took the College Board Tests. Even the SAT was taken by only about 65 percent of the Grade 12 students. Thus there were about 3,500 students who did not take any of these tests. If trends observed for these data are different from the trends for other tests, the difference could be caused by these 3,500 students.

There is no way to determine from the data available how many of the students taking the APE's actually received advanced placement credit in college. Each college had the option of deciding if a student's performance was good enough for college credit or placement in advanced level courses.

The results for any test with fewer than 100 students should be viewed cautiously because they are liable to considerable fluctuation.

Results

MCPS seniors graduating in 1978 maintained a generally high level of performance on the SAT and the APE's of the CEEB. Performance of MCPS students on the CEEB achievement tests also remained high but declined from the 1977 level. All score changes reported for the SAT and for achievement tests are modest, whether positive or negative.

The 5,823 MCPS seniors taking the SAT averaged 465 on the Verbal and 505 on the Math sections (Table 1-F-1). This represented a one-point increase over 1977 on Verbal and a one-point decline in Math. Nationally, the Verbal score remained 429, the same as in 1977; the Math score declined two points to 468. Thus, MCPS students outscored students across the country by 36 points on the Verbal and 37 points on the Math (Table 1-F-2). This means that MCPS students scored approximately 12 percentile rank units above the national average on both parts of the test.

Table 1-F-1 also shows the SAT results broken out by sex. The data indicate that the percentages of males and females tested across the two years remains quite comparable. In addition, for both test periods males outscored females by a small amount on the Verbal tests and a fairly substantial amount on the Math tests. This is consistent with national trends.

An area of some interest is the extent of minority group participation in SAT testing in MCPS. Minority group students make up 14 percent of Grade 12 enrollment. Although exact data on the numbers of minority group students tested are not available (supplying such information is voluntary on the part of students), it is estimated that 12 percent of the MCPS students tested on the SAT in 1978 were from minority groups.

Table 1-F-3 presents the results for the CEEB achievement tests for the past three years. The average score for MCPS students declined from 1977 levels on eight of the 12 tests reported. However, MCPS students outscore all students nationally on all tests, in some cases by substantial margins which range from nine points on the Spanish test to 56 points on the Literature test. The trends and differences are shown in Table 1-F-4. On all but three tests (German, Literature, and Physics), the margin between MCPS students and the national group declined. The best MCPS performance was on the Mathematics Level I test (703), and the lowest was on the European History test (540).

The APE results are shown in Table 1-F-5. The number of Advanced Placement tests taken by MCPS students increased by 133, from 920 in 1977 to 1,053 in 1978. This 14 percent increase did not affect the distribution of scores across all subject areas. It might be expected that in a program designed for top students an increase in number might lower the average performance.

This was not the case. Eighty-three percent of the scores in 1978 were 3 or above, compared to 81 percent in 1977. Nationally in 1978, 73 percent of the scores were 3 or above. The trend is even more impressive if 1978 is compared to 1976 when 739 scores were recorded. With a 42 percent increase in students taking the tests from 1976 to 1978, the percent of scores at the 4 or above level rose from 40 to 49.

Individual tests in which substantial gains were made in 1978 were American History and Chemistry, where the percents of students earning 4 or above increased from 45 to 59 and from 39 to 50, respectively. The most popular subjects were English, Math, Calculus, American History, and Biology. The number of students taking the English examination increased 24 percent in 1978, from 253 to 314. The 1978 national Advanced Placement results are not yet available.

Findings Requiring Further Study

When these results are viewed in conjunction with the results of the spring 1978 testing program, there is a definite indication that while senior high school academic performance remains substantially above the national average, there is clearly a modest drop in performance when the most recent results are compared to those of previous years. Results obtained from last year's Grade 12 students on the CEEB achievement tests and results obtained from last year's Grade 11 students on the Tests of Academic Progress show that there have been more declines than increases when this year's scores are compared with those of one and two years ago. While the amount of decline is small (usually from 1 to 3 percentile rank units) this is still an indication that problems may exist at this level and that reasons for the decline should be examined in some detail.

TABLE 1-F-1

SCHOLASTIC APTITUDE TEST RESULTS FOR MCPS, MARYLAND, AND NATIONAL

	MALE			FEMALE			TOTAL		
	MCPS	Maryland	National	MCPS	Maryland	National	MCPS	Maryland	National
Verbal									
1978 Mean	466	436	433	464	425	425	465	431	429
# Tested	2,841	14,102	478,791	2,932	15,801	510,394	5,823	29,903	989,185
1977 Mean	466	435	431	461	428	427	464	431	429
# Tested	2,906	13,982	479,070	3,080	15,469	500,326	5,986	29,451	979,396
Math									
1978 Mean	529	495	494	482	441	444	505	466	468
# Tested	2,841	14,101	478,717	2,982	15,798	510,332	5,823	29,899	989,049
1977 Mean	534	498	497	479	443	445	506	469	470
# Tested	2,907	13,983	479,058	3,078	15,467	500,286	5,985	29,450	979,344
Percent of Students Tested:									
1978	49	47	48	51	53	52			
1977	49	47	49	51	53	51			
Percent of Enrollment Tested:									
1978	61			65			63		
1977	62			68			65		

NOTE: The SAT scores are on a scale ranging from 200 to 800. A difference of 10 points in the range reported in this table represents a change of about 3 percentile rank points nationally.

TABLE 1-F-2
SCHOLASTIC APTITUDE TEST SCORE TRENDS
(1977 to 1978)

	<u>MCPS</u>	<u>National</u>	1978 Difference Between MCPS and National (MCPS Always Higher)	MCPS 1978 Number Tested
SAT Verbal - Total	+1	0	36	5,823
SAT Verbal - Male	0	+2	33	2,841
SAT Verbal - Female	+3	-2	39	2,982
SAT Math - Total	-1	-2	37	5,823
SAT Math - Male	-5	-3	35	2,841
SAT Math - Female	+3	-1	38	2,982

NOTE: The SAT scores are on a scale ranging from 200 to 800. A difference of 10 points in the range reported in this table represents a change of about 3 percentile rank points nationally.

TABLE 1-F-3

COLLEGE ENTRANCE EXAMINATION, BOARD ACHIEVEMENT TEST RESULTS

(Mean Scores)

	1976		1977		1978	
	National /	MCPS	National /	MCPS	National /	MCPS
American History	493	534	492	540	496	537
Number Tested		345		304		297
Biology	543	579	543	572	544	562
Number Tested		361		365		311
Chemistry	567	619	574	626	577	615
Number Tested		299		323		369
English	532	579	516	560	512	556
Number Tested		1,743		1,632		1,648
European History	531	536	526	568	507	540
Number Tested		79		48		66
German	555	601	551	564	553	585
Number Tested		37		33		37
French	553	591	553	591	552	583
Number Tested		360		331		337
Literature	525	581	526	575	521	577
Number Tested		242		197		202
Mathematics I	546	573	547	569	541	559
Number Tested		1,023		991		940
Mathematics II	665	702	666	704	665	701
Number Tested		414		434		510
Physics	592	624	593	621	591	623
Number Tested		87		83		72
Spanish	547	559	535	545	544	553
Number Tested		186		192		215
Average	538	581	533	575	531	572
Number Tested		1,794		1,679		1,709

NOTE: The SAT scores are on a scale ranging from 200 to 800. A difference of 10 points in the range reported in this table represents a change of about 3 percentile rank points nationally.

TABLE 1-F-4
COLLEGE ENTRANCE EXAMINATION BOARD (CEEB)
SCORE TRENDS
(1977 to 1978)

	<u>MCPS</u>	<u>National</u>	1978 Difference Between MCPS and National (MCPS Always Higher)	MCPS 1978 Number <u>Tested</u>
CEEB - American History	- 3	+ 4	41	297
CEEB - Biology	-10	+ 1	18	311
CEEB - Chemistry	-11	+ 3	38	369
CEEB - English	- 4	- 4	44	1,648
CEEB - European History	-28	-19	33	66
CEEB - French	- 8	- 1	31	337
CEEB - German	+21	+ 2	32	37
CEEB - Literature	+ 2	- 5	56	202
CEEB - Mathematics I	-10	- 6	18	940
CEEB - Mathematics II	- 3	- 1	36	510
CEEB - Physics	+ 2	- 2	32	72
CEEB - Spanish	+ 8	+ 9	9	215
CEEB - Average	- 3	- 2	41	1,709

NOTE: The SAT scores are on a scale ranging from 200 to 800. A difference of 10 points in the range reported in this table represents a change of about 3 percentile rank points nationally.

TABLE 1-F-5
ADVANCED PLACEMENT EXAMINATION GRADE DISTRIBUTIONS
(1977 and 1978)

	Percent Obtaining Each Score										Number Tested	
	1		2		3		4		5			
	'77	'78	'77	'78	'77	'78	'77	'78	'77	'78	'77	'78
Art History					100						1	-
American History	3	2	25	14	27	26	28	39	17	20	142	133
Biology	6	4	15	13	31	31	28	23	20	29	104	126
Chemistry	7	1	13	9	41	40	23	25	16	25	56	68
English	1	1	14	15	40	41	23	24	22	18	253	314
European History	5	4	11	13	47	40	18	23	19	19	91	94
French Language	12	0	6	12	29	22	18	22	35	44	17	32
French Literature			25	10	25	30	25	20	25	40	4	10
German	14	10	29		29	70	29	20			7	10
Math Calculus	8	11	8	9	20	27	29	20	35	33	181	199
Music				13	100	50		25		13	2	8
Physics	18	7	6	11	18	26	32	33	26	22	38	27
Spanish		3	13	28	21	34	46	28	13	6	24	32
Total Percent (MCPS)	5	4	14	13	32	34	26	25	23	24	920	1053
National Percent		7		21		37		21		15		
Cumulative Percents												
1975	100		96		78		42		18			
1976	100		96		79		40		16			
1977	100		95		81		49		23			
1978	100		96		83		49		24			
National - 1978	100		93		73		36		15			

133

133A

1-G. SUMMARY OF 1977-78 MCPS TEST RESULTS

In this chapter, results obtained from tests administered systemwide and from the College Board tests have been examined and analyzed. For many tests, sex and racial/ethnic group differences were presented. The major findings in each general area are summarized here.

Systemwide Tests

Results for tests administered systemwide in the 1977-78 school year showed performance generally to be at an all-time high for the years in which the currently used tests have been administered. This includes the scores on the Cognitive Abilities Test (CAT) and the Iowa Tests of Basic Skills (ITBS) in Grades 3, 5, 7, and 9; and on the Maryland Functional Reading Test (MFRT) in Grades 9 and 11. The one exception to this trend was Grade 11 performance on the CAT and the Tests of Academic Progress (TAP) where only one of seven tests was at an all-time high. All MCPS means on the CAT, ITBS, and TAP are above the average of the norming sample. Averages for the state are not yet available. All MCPS results on the MFRT are higher than those for the state.

College Board Tests

Results from the administration of the tests of the College Entrance Examination Board (CEEB) also show MCPS students performing above the national and state results. Scores on the CEEB Scholastic Aptitude Tests (SAT) were above the national average by 36 points on the Verbal test and 37 points on the Mathematics test. MCPS students were from nine to 56 points above the national average on the CEEB achievement tests. The percent of MCPS students scoring at the highest two levels on the Advanced Placement Examination (APE) was somewhat higher than the national percentages. The trends on these tests showed mixed results. The SAT results were almost the same as last year's, while achievement test results declined on 8 of the 12 tests. Performance on the APE showed some improvement. All changes were modest.

Racial/Ethnic Differences

The breakdown of the test results by racial/ethnic category generally resulted in Asian students scoring the highest, followed in order by White, Hispanic, and Black students. This was true for most of the CAT, ITBS, TAP, and MFRT results. The major exception was for Asian students in Grade 11, who scored below Whites and at roughly the same level as Hispanics on the MFRT. This general trend has also been found on the tests administered nationwide by the National Assessment of Educational Progress (NAEP) for Whites, Hispanics, and Blacks. All groups performed better than their counterparts in most school districts around the country.

Black students reduced the differences between their scores and the scores of White students on the CAT, ITBS, and TAP. While these reductions were small, they were consistent across all grade levels tested. White students also tended to close the gap between themselves and Asians. Hispanic students generally fell a little further behind Whites at all grade levels.

Sex Differences

Females tended to score higher than males on verbal and language type tests, while males scored higher on the mathematics-related and science tests on the CAT, ITBS, and the TAP. This was especially true in the secondary grades. While NAEP data were consistent with this trend, the results of the SAT were not. On the verbal and mathematics sections of the SAT, males outscored females both locally and nationally. The difference in verbal scores was small but was substantial in mathematics.

Longitudinal Results

The scores of students tested in MCPS in both 1976 and 1978 (longitudinal group) were compared to those tested here in only one of those years (non-longitudinal group). The students tested in MCPS in both years scored higher at all grade levels countywide and for all racial/ethnic groups. The difference between the longitudinal and non-longitudinal groups meant that the countywide averages were generally observed by up to 3 percentile rank units by the non-longitudinal group. Countywide, the differences between the two groups were about the same in 1976 and 1978. This indicates that the students who were tested in MCPS only in 1976 were able to perform as well on the ITBS and CAT, relative to the longitudinal group, as students who were tested only in 1978. This was true for White students and Black students. However, for Hispanic students and Asian students the differences in favor of the longitudinal groups were generally larger in 1978.

Findings Requiring Further Study

There have emerged from the above analysis some questions that clearly seem to call for further investigation. First, there is a need to look more closely at the test performance of Hispanic students and at factors which may be responsible for the decline in their scores relative to the scores of other racial/ethnic groups in MCPS. A primary concern should be determining whether or not language problems experienced while attempting to take the tests contributed to this score pattern. Second, it should be determined if the senior high school results on the CEEB achievement tests and on the TAP indicate an area for concern. Scores on these tests have declined slightly in recent years.

CHAPTER 2
ANALYSIS OF SCHOOL DATA

136

INTRODUCTION TO SCHOOL DATA ANALYSIS

Test results for individual schools for 1977-78 are presented in this chapter to provide an easily accessible source of data that is often needed for various activities such as program planning and sampling. The chapter is divided into three sections:

- 2.A. Mean Test Scores by School
- 2.B. School Interquartile Ranges
- 2.C. Longitudinal Test Results by School

Section 2.A contains mean scores for each school on each test of the Cognitive Abilities Test (CAT), the Iowa Tests of Basic Skills (ITBS), or the Tests of Academic Progress (TAP). These are the same data provided to each school for inclusion in its Annual School Report.

Section 2.B presents the national percentile ranks of the students scoring at the first and third quartiles for each school. These data, presented in graphic format, provide a better picture of the overall level of achievement, as measured by standardized tests, than can be provided by the mean score alone. These interquartile ranges show the spread of scores of the middle half of the students in each school.

Comparing the scores of schools or of grades within schools in the first two sections can produce misleading conclusions. School test results may differ for many reasons that have little to do with a school's instructional program, although that is often what the difference is attributed to.

Section 2.C. contains school longitudinal data that will provide a better way to judge a school's performance. Results for only the students in that school for two consecutive test administrations (two years apart) will be compared to the results of students new to the school. The effect of the new students on the school's results can easily be seen, as can the school's success with the students it has had for at least two years.

Cautions to be Observed in Interpreting Data

Several cautions which are discussed below should be observed when reviewing the data presented in this chapter. Additional discussion can be found in the introduction to Chapter 1, and explanations of technical terms can be found in Chapter 4.

Differences in Group Membership

At each grade level different individuals are tested. Differences in scores may occur simply because the groups of students whose performance is being compared are composed of different individuals who vary in many ways. This must be borne in mind if one compares the performance of two grades in a school or the nonlongitudinal groups in Section 2.C.

Differences in Tests and Norms

The CAT, ITBS, and TAP have the same or similar names at each grade level. However, the actual items making up the test batteries are different. The test administered at Grade 3 is, therefore, not the same as the test administered at Grade 5 (and so on for other grades or test "levels").

The national norming sample at each grade may have differed in ability. Therefore, the national percentile ranks of a particular test battery may not have precisely the same meaning from level to level across grades. (This is discussed in more detail in Chapter 4.)

Since the TAP, administered in Grade 11, is completely different from the ITBS, comparisons should not be made between scores on the two batteries even on tests which have similar names.

Fluctuations of Statistics of Small Groups

Statistics reported for small groups are liable to fluctuate considerably. If two small groups are being compared, differences may appear because of this tendency of scores to fluctuate. This is true for the means, medians, and quartiles reported in this chapter. The means are especially influenced by a few extreme scores.

Subtracting Percentile Ranks and Grade Equivalent Scores

Neither percentile ranks (PR) nor grade equivalent scores (GE) should be subtracted in an attempt to find between-year, between-grade, or between-group differences in amounts of "improvement" or "decline." Neither one represents a consistent numerical scale. In some segments of the percentile scale, for example, small differences in raw scores can result in large differences in percentile ranks. In other segments of the scale, the same raw-score differences may result in only small differences in percentile ranks. The same thing is true of the GE scale.

2-A. MEAN TEST SCORES BY SCHOOL

Rationale, Data, and Data Analysis

Rationale

This section contains a copy of the test results reported to each school for inclusion in its Annual School Report. It provides a handy reference source for anyone wanting to review the scores of specific schools. The schools are arranged in alphabetical order regardless of level. The administrative area of each school is indicated next to the school name.

Review of the average test scores of the students in a school provides an indication of possible curricular strengths or weaknesses for that school. If the means within a school for one or two of the tests of the ITBS battery are somewhat higher than for the other tests, it could indicate a specific curricular strength in that school. One or two especially low scores could indicate a weakness.

Data

Each table in this section reports the following mean scores for a school:

1. Standard age score (SAS) for the CAT
2. Grade equivalent (GE) score for the ITBS
3. Standard score (SS) for the TAP

In addition, the national percentile rank (PR) of the student achieving each mean score is reported.

The mean scores for this section have been computed using SAS's, GE's, and SS's rather than normal curve equivalents (NCE). This computational method has been used to be consistent with the method required by the Maryland Accountability Program. The results would generally be very close to those that would be found if NCE's were used.

Analysis

No formal analyses have been performed. The data are descriptive.

Results

Results are presented in the tables. The set of scores for a given school should be reviewed to determine if any of the test scores are substantially above or below the majority of scores.

ARCOLA ELEMENTARY (Area 2)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	106	65	103	57
Quantitative	109	71	107	67
Nonverbal	105	62	108	69
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	3.8	52	5.6	47
Reading Comprehension	4.0	57	5.9	55
Spelling	4.7	72	6.0	56
Capitalization	4.9	77	5.6	48
Punctuation	4.5	69	5.8	51
Language Usage	4.2	60	6.0	55
Map Reading	4.2	67	5.7	49
Reading Graphs & Tables	4.3	68	5.6	47
Knowledge & Use of Reference Materials	4.2	69	5.8	52
Math Concepts	4.1	63	6.3	65
Math Problem Solving	4.0	62	6.2	65

ARGYLE JR. HS (Area 2)

Grade 7

Grade 9

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	107	67	105	62
Quantitative	108	69	108	69
Nonverbal	110	73	110	73
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	7.6	50	9.3	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	7.9	54	9.6	55
Reading Comprehension	7.8	52	9.2	48
Spelling	8.1	56	9.3	49
Capitalization	8.2	57	9.6	51
Punctuation	8.0	54	9.4	50
Language Usage	8.1	55	9.4	50
Map Reading	8.8	70	10.0	64
Reading Graphs & Tables	8.1	58	9.6	52
Knowledge & Use of Reference Materials	8.3	61	9.5	53
Math Concepts	8.3	62	9.6	50
Math Problem Solving	8.0	56	9.3	50

ASHBURTON ELEMENTARY (Area 1)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	119	88	112	77
Quantitative	123	92	112	77
Nonverbal	118	87	113	79
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	5.0	86	6.4	67
Reading Comprehension	5.3	88	6.3	64
Spelling	5.3	83	6.5	65
Capitalization	5.8	91	7.7	82
Punctuation	5.7	88	6.8	70
Language Usage	5.5	85	7.0	72
Map Reading	5.0	86	6.3	66
Reading Graphs & Tables	5.4	90	6.7	74
Knowledge & Use of Reference Materials	5.0	89	6.2	61
Math Concepts	5.0	89	6.7	75
Math Problem Solving	5.0	92	6.0	59

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	115	83	115	83
Quantitative	119	88	111	75
Nonverbal	119	88	118	87
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.5	75	6.9	78
Reading Comprehension	4.6	74	6.5	69
Spelling	4.5	68	6.8	71
Capitalization	5.0	79	7.6	81
Punctuation	4.9	77	6.8	70
Language Usage	4.8	72	7.2	76
Map Reading	4.7	81	6.9	79
Reading Graphs & Tables	4.9	83	7.3	84
Knowledge & Use of Reference Materials	4.5	79	6.7	71
Math Concepts	4.2	66	6.4	67
Math Problem Solving	4.4	79	6.6	77

JOHN T. BAKER JR. HS (Area 5)

Grade 7

Grade 9

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	102	55		
Quantitative	105	62		
Nonverbal	108	69		
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	7.6	50	9.3	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	7.4	43		
Reading Comprehension	7.5	46		
Spelling	7.2	42		
Capitalization	8.1	56		
Punctuation	8.0	54		
Language Usage	7.7	50		
Map Reading	7.9	53		
Reading Graphs & Tables	7.6	47		
Knowledge & Use of Reference Materials	7.6	47		
Math Concepts	7.9	53		
Math Problem Solving	7.5	45		

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	108	69	107	67
Quantitative	109	71	110	73
Nonverbal	110	73	112	77
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	7.6	50	9.3	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	8.1	58	9.4	50
Reading Comprehension	7.9	54	9.4	51
Spelling	8.1	56	9.2	48
Capitalization	8.4	60	9.8	54
Punctuation	8.1	56	9.5	51
Language Usage	8.0	54	9.4	50
Map Reading	8.8	70	9.9	63
Reading Graphs & Tables	8.1	58	9.7	54
Knowledge & Use of Reference Materials	8.0	56	9.5	53
Math Concepts	8.3	62	9.6	50
Math Problem Solving	8.0	56	9.3	50

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	120	89	120	89
Quantitative	122	92	121	91
Nonverbal	119	88	118	87
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.9	84	6.9	78
Reading Comprehension	4.9	81	7.1	81
Spelling	5.0	78	6.8	71
Capitalization	5.1	81	7.3	77
Punctuation	5.0	78	7.1	75
Language Usage	5.1	78	7.5	81
Map Reading	4.8	83	7.3	86
Reading Graphs & Tables	4.9	83	7.9	91
Knowledge & Use of Reference Materials	4.7	83	7.2	81
Math Concepts	4.7	82	7.3	87
Math Problem Solving	4.6	85	7.1	87

LUCY BARNSLEY ELEMENTARY (Area 4)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	114	81	119	88
Quantitative	118	87	124	93
Nonverbal	115	83	119	88
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.4	72	6.8	76
Reading Comprehension	4.5	71	6.8	76
Spelling	5.0	78	7.2	77
Capitalization	5.4	85	7.2	75
Punctuation	5.2	81	7.0	73
Language Usage	4.9	74	7.3	77
Map Reading	4.6	78	7.1	83
Reading Graphs & Tables	4.8	81	7.3	84
Knowledge & Use of Reference Materials	4.5	79	7.1	79
Math Concepts	4.2	66	7.3	87
Math Problem Solving	4.4	79	6.9	83

BELLS MILL ELEMENTARY (Area 3) **Grade 3**

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	119	88	113	79
Quantitative	120	89	114	81
Nonverbal	116	84	115	83
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.7	80	6.6	72
Reading Comprehension	4.8	78	6.6	71
Spelling	5.5	86	6.9	72
Capitalization	5.5	87	7.7	82
Punctuation	5.5	86	7.3	78
Language Usage	5.2	80	7.4	79
Map Reading	5.0	86	7.1	83
Reading Graphs & Tables	4.9	83	7.5	87
Knowledge & Use of Reference Materials	4.9	87	7.0	77
Math Concepts	4.6	79	7.0	81
Math Problem Solving	4.7	87	6.7	79

BELMONT ELEMENTARY (Area 4)
Grade 3
Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	115	83	109	71
Quantitative	118	87	110	73
Nonverbal	112	77	113	79
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.3	69	5.9	54
Reading Comprehension	4.5	71	5.9	55
Spelling	4.9	76	6.1	58
Capitalization	5.1	81	6.5	64
Punctuation	5.2	81	6.5	65
Language Usage	4.8	72	6.5	63
Map Reading	4.5	76	6.2	63
Reading Graphs & Tables	4.6	76	6.5	69
Knowledge & Use of Reference Materials	4.4	76	6.1	59
Math Concepts	4.2	66	6.6	72
Math Problem Solving	4.3	75	6.4	72

BELT JR. HS (Area 4)

Grade 7

Grade 9

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	100	50	101	52
Quantitative	103	57	104	60
Nonverbal	105	62	107	67
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	7.6	50	9.3	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	7.2	40	8.8	39
Reading Comprehension	7.2	41	8.7	40
Spelling	7.2	42	8.6	40
Capitalization	7.5	47	9.0	43
Punctuation	7.3	44	8.8	41
Language Usage	7.1	41	8.5	39
Map Reading	7.7	50	9.0	47
Reading Graphs & Tables	7.4	43	9.0	42
Knowledge & Use of Reference Materials	7.4	44	8.8	40
Math Concepts	7.6	47	9.0	41
Math Problem Solving	7.1	38	8.7	39

BEL PRE ELEMENTARY (Area 2)
Grade 3
Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	106	65	109	71
Quantitative	111	75	107	67
Nonverbal	111	75	111	75
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.0	59	5.5	44
Reading Comprehension	4.0	57	5.7	50
Spelling	4.4	66	5.7	50
Capitalization	4.5	68	6.1	57
Punctuation	4.2	62	5.9	54
Language Usage	4.3	62	6.0	55
Map Reading	4.3	70	5.9	55
Reading Graphs & Tables	4.4	71	6.2	62
Knowledge & Use of Reference Materials	4.1	65	5.8	52
Math Concepts	4.0	59	5.8	52
Math Problem Solving	4.1	66	5.7	49

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50
Cognitive Abilities Test (CAT)		
Verbal	113	79
Quantitative	113	79
Achievement	School Average Standard Age Score (S.S.)	S.S. Expressed as National Percentile
Norm	50	50
Tests of Academic Progress (TAP)		
Social Studies	56	67
Mechanics of English	56	68
Science	56	72
Reading	55	67
Mathematics	58	78
Literature	56	68

BETHESDA ELEMENTARY (Area 1)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	121	91	118	87
Quantitative	122	92	119	88
Nonverbal	117	86	117	86
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	5.2	90	6.8	76
Reading Comprehension	5.3	88	7.0	80
Spelling	5.4	84	7.3	79
Capitalization	5.9	92	7.9	85
Punctuation	5.8	89	7.5	81
Language Usage	5.5	85	7.4	79
Map Reading	5.2	89	7.3	86
Reading Graphs & Tables	5.4	90	7.2	83
Knowledge & Use of Reference Materials	5.1	90	7.0	77
Math Concepts	4.8	84	7.2	85
Math Problem Solving	4.9	91	6.7	79

BEVERLY FARMS ELEMENTARY (Area 3) Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	118	87	117	86
Quantitative	116	84	117	86
Nonverbal	113	79	116	84
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.7	80	6.5	70
Reading Comprehension	4.7	76	6.6	71
Spelling	5.2	81	6.6	67
Capitalization	5.2	82	7.1	74
Punctuation	5.4	84	6.8	70
Language Usage	4.9	74	7.1	74
Map Reading	4.8	83	7.0	81
Reading Graphs & Tables	5.0	84	7.0	79
Knowledge & Use of Reference Materials	4.5	79	7.0	77
Math Concepts	4.3	69	7.1	83
Math Problem Solving	4.4	79	6.7	79

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50
Cognitive Abilities Test (CAT)		
Verbal	101	52
Quantitative	103	57
Achievement	School Average Standard Age Score (S.S.)	S.S. Expressed as National Percentile
Norm	50	50
Tests of Academic Progress (TAP)		
Social Studies	48	39
Mechanics of English	49	43
Science	50	49
Reading	48	39
Mathematics	50	49
Literature	49	42

BRADLEY ELEMENTARY (Area 1)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	117	86	118	87
Quantitative	124	93	119	88
Nonverbal	116	84	120	89
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.9	84	6.9	78
Reading Comprehension	5.4	89	6.9	78
Spelling	5.2	81	7.4	80
Capitalization	5.8	91	8.1	88
Punctuation	5.6	87	7.8	85
Language Usage	5.3	81	7.6	82
Map Reading	5.1	87	7.4	87
Reading Graphs & Tables	5.3	89	7.6	88
Knowledge & Use of Reference Materials	5.1	90	7.3	83
Math Concepts	5.1	91	7.1	83
Math Problem Solving	4.9	91	7.7	94

BROAD ACRES ELEMENTARY (Area 2) Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	102	55	104	60
Quantitative	106	65	102	55
Nonverbal	107	67	106	65
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	3.6	47	5.7	49
Reading Comprehension	3.6	47	5.4	42
Spelling	4.1	59	6.0	56
Capitalization	4.8	75	7.1	74
Punctuation	4.6	71	6.6	67
Language Usage	3.9	54	6.0	55
Map Reading	3.4	39	5.4	41
Reading Graphs & Tables	3.6	46	5.7	49
Knowledge & Use of Reference Materials	3.8	53	6.1	59
Math Concepts	3.6	46	5.5	44
Math Problem Solving	3.6	46	5.6	47

BROOKHAVEN ELEMENTARY (Area 4)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	111	75	109	71
Quantitative	113	79	111	75
Nonverbal	111	75	111	75
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.2	65	6.1	60
Reading Comprehension	4.5	71	6.1	60
Spelling	4.8	74	6.6	67
Capitalization	5.0	79	7.0	72
Punctuation	5.1	80	6.6	67
Language Usage	4.6	68	6.3	60
Map Reading	4.4	73	6.3	66
Reading Graphs & Tables	4.3	68	6.4	67
Knowledge & Use of Reference Materials	4.3	72	6.4	66
Math Concepts	4.5	76	6.5	70
Math Problem Solving	4.3	75	6.1	62

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	120	89	118	87
Quantitative	123	92	116	84
Nonverbal	118	87	113	79
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.8	82	6.9	78
Reading Comprehension	4.9	81	7.1	81
Spelling	5.1	79	7.3	79
Capitalization	5.4	85	7.4	78
Punctuation	5.4	84	7.1	75
Language Usage	5.2	80	7.2	76
Map Reading	4.9	84	7.3	86
Reading Graphs & Tables	5.0	84	7.1	81
Knowledge & Use of Reference Materials	4.8	85	6.9	75
Math Concepts	4.7	82	7.3	87
Math Problem Solving	4.9	91	6.8	81

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	100	50	100	50
Quantitative	101	52	100	50
Nonverbal	101	52	107	67
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	3.7	49	4.9	31
Reading Comprehension	3.8	52	4.8	28
Spelling	4.4	66	5.2	39
Capitalization	4.0	57	5.1	37
Punctuation	4.0	57	5.1	37
Language Usage	3.9	54	4.9	35
Map Reading	3.7	49	5.1	34
Reading Graphs & Tables	3.7	49	5.1	35
Knowledge & Use of Reference Materials	3.5	43	5.2	36
Math Concepts	3.7	49	5.0	31
Math Problem Solving	3.8	53	5.0	31

BROOME MIDDLE (Area 3)

Grade 7

Grade 9

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	101	52	101	52
Quantitative	101	52	105	62
Nonverbal	104	60	107	67
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	7.6	50	9.3	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	7.0	36	8.8	39
Reading Comprehension	7.0	37	8.8	42
Spelling	6.9	38	8.1	34
Capitalization	7.3	44	8.9	42
Punctuation	7.1	41	8.3	35
Language Usage	7.1	41	8.2	36
Map Reading	7.5	46	9.1	49
Reading Graphs & Tables	7.1	38	8.6	36
Knowledge & Use of Reference Materials	7.3	42	8.7	38
Math Concepts	7.2	39	9.2	44
Math Problem Solving	7.0	36	8.6	37

BROWN STATION ELEMENTARY (Area 5)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	110	73	104	60
Quantitative	114	81	105	62
Nonverbal	109	71	110	73
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.2	65	5.7	49
Reading Comprehension	4.4	68	5.7	50
Spelling	4.9	76	6.0	56
Capitalization	5.1	81	6.3	61
Punctuation	5.0	78	6.1	58
Language Usage	4.4	64	6.3	60
Map Reading	4.3	70	6.2	63
Reading Graphs & Tables	4.6	76	6.6	72
Knowledge & Use of Reference Materials	4.3	72	6.3	64
Math Concepts	4.4	73	6.7	75
Math Problem Solving	4.3	75	6.0	59

BURNING TREE ELEMENTARY (Area 1) Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	121	91	122	92
Quantitative	124	93	122	92
Nonverbal	118	87	119	88
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.8	82	7.1	82
Reading Comprehension	5.1	84	7.2	83
Spelling	5.5	86	7.5	82
Capitalization	5.8	91	7.9	85
Punctuation	5.6	87	7.7	84
Language Usage	5.2	80	7.4	79
Map Reading	5.0	86	7.6	89
Reading Graphs & Tables	5.4	90	7.7	89
Knowledge & Use of Reference Materials	4.9	87	7.4	84
Math Concepts	5.1	91	7.9	94
Math Problem Solving	4.9	91	7.1	87

BURTONSVILLE ELEMENTARY (Area 4)
Grade 3
Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	106	65	109	71
Quantitative	115	83	107	67
Nonverbal	108	69	110	73
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.8	82	6.2	62
Reading Comprehension	4.2	63	5.9	55
Spelling	5.0	78	6.0	56
Capitalization	5.4	85	5.7	50
Punctuation	5.4	84	5.5	45
Language Usage	4.3	62	6.2	58
Map Reading	4.5	76	6.4	68
Reading Graphs & Tables	4.5	74	6.3	65
Knowledge & Use of Reference Materials	4.2	69	6.4	66
Math Concepts	4.3	69	7.0	81
Math Problem Solving	4.4	79	6.0	59

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	112	77	113	79
Quantitative	117	86	118	87
Nonverbal	114	81	117	86
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	7.6	50	9.3	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	8.6	69	10.1	65
Reading Comprehension	8.4	63	9.9	60
Spelling	8.4	61	10.1	61
Capitalization	9.4	73	10.6	64
Punctuation	8.7	66	10.5	66
Language Usage	8.7	64	10.7	67
Map Reading	8.9	72	10.4	71
Reading Graphs & Tables	8.9	74	10.4	65
Knowledge & Use of Reference Materials	8.7	69	10.2	65
Math Concepts	8.9	73	10.4	63
Math Problem Solving	8.3	64	9.9	61

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	115	83	115	83
Quantitative	120	89	114	81
Nonverbal	117	86	117	86
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.6	78	6.7	74
Reading Comprehension	4.8	78	6.7	73
Spelling	5.0	78	6.9	72
Capitalization	5.1	81	7.5	80
Punctuation	5.0	78	7.1	75
Language Usage	5.0	76	7.1	74
Map Reading	4.8	83	6.8	77
Reading Graphs & Tables	4.9	83	7.0	79
Knowledge & Use of Reference Materials	4.5	79	6.8	73
Math Concepts	4.7	82	7.2	85
Math Problem Solving	4.6	85	6.4	72

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	116	84	113	79
Quantitative	119	88	113	79
Nonverbal	113	79	114	81
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.5	75	6.2	62
Reading Comprehension	4.6	74	6.1	60
Spelling	5.4	84	6.8	71
Capitalization	5.8	91	6.8	69
Punctuation	5.6	87	6.6	67
Language Usage	4.8	72	6.5	63
Map Reading	4.9	84	6.8	77
Reading Graphs & Tables	5.0	84	6.8	76
Knowledge & Use of Reference Materials	4.6	81	6.5	68
Math Concepts	4.8	84	6.6	72
Math Problem Solving	4.5	82	6.4	72

CARDEROCK SPRINGS ELEMENTARY (Area 1) **Grade 3**

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	120	89	115	83
Quantitative	125	94	120	89
Nonverbal	117	86	120	89
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.8	82	6.9	78
Reading Comprehension	4.8	78	6.7	73
Spelling	5.2	81	7.0	74
Capitalization	5.3	84	7.4	78
Punctuation	5.6	87	7.2	77
Language Usage	5.4	83	7.0	72
Map Reading	5.2	89	6.8	77
Reading Graphs & Tables	5.4	90	7.3	84
Knowledge & Use of Reference Materials	5.0	89	6.8	73
Math Concepts	5.3	93	7.0	81
Math Problem Solving	5.1	93	6.8	81

CASHELL ELEMENTARY (Area 4)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	115	83	110	73
Quantitative	114	81	107	67
Nonverbal	111	75	108	69
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.6	78	6.2	62
Reading Comprehension	4.8	78	6.6	71
Spelling	5.0	78	6.4	64
Capitalization	5.2	82	6.5	64
Punctuation	5.0	78	6.2	59
Language Usage	4.8	72	6.1	57
Map Reading	4.8	83	6.2	63
Reading Graphs & Tables	4.9	83	6.3	65
Knowledge & Use of Reference Materials	4.5	79	6.4	66
Math Concepts	4.1	63	6.3	65
Math Problem Solving	4.3	75	6.4	72

CEDAR GROVE ELEMENTARY (Area 5)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	107	67	114	81
Quantitative	114	81	113	79
Nonverbal	115	83	114	81
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.0	59	6.3	65
Reading Comprehension	4.2	63	6.3	64
Spelling	4.3	64	6.6	67
Capitalization	4.2	62	6.8	69
Punctuation	4.3	65	6.5	65
Language Usage	4.0	56	6.8	69
Map Reading	4.4	73	6.7	75
Reading Graphs & Tables	4.5	74	6.9	78
Knowledge & Use of Reference Materials	4.0	61	6.7	71
Math Concepts	4.1	63	6.6	72
Math Problem Solving	4.1	66	6.3	69

CHEVY CHASE ELEMENTARY (Area 1) Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	115	83	112	77
Quantitative	115	83	113	79
Nonverbal	109	71	112	77
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.3	69	6.3	65
Reading Comprehension	4.5	71	6.2	62
Spelling	4.8	74	6.5	65
Capitalization	4.7	73	6.6	66
Punctuation	4.8	75	6.7	68
Language Usage	4.6	68	6.7	67
Map Reading	4.3	70	6.3	66
Reading Graphs & Tables	4.4	71	6.6	72
Knowledge & Use of Reference Materials	4.2	69	6.4	66
Math Concepts	4.3	69	6.6	72
Math Problem Solving	4.2	70	6.2	65

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50
Cognitive Abilities Test (CAT)		
Verbal	114	81
Quantitative	116	84
Achievement	School Average Standard Age Score (S.S.)	S.S. Expressed as National Percentile
Norm	50	50
Tests of Academic Progress (TAP)		
Social Studies	56	67
Mechanics of English	57	71
Science	57	74
Reading	56	70
Mathematics	59	81
Literature	56	68

CLARKSBURG ELEMENTARY (Area 5)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	105	62	105	62
Quantitative	109	71	104	60
Nonverbal	108	69	109	71
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	3.9	55	5.6	47
Reading Comprehension	4.0	57	5.6	47
Spelling	4.0	57	5.8	52
Capitalization	4.2	62	5.9	54
Punctuation	4.4	67	6.1	58
Language Usage	4.3	62	5.9	53
Map Reading	3.9	56	5.8	52
Reading Graphs & Tables	4.0	58	5.9	55
Knowledge & Use of Reference Materials	3.8	53	5.7	49
Math Concepts	3.6	46	5.9	54
Math Problem Solving	3.9	57	5.8	52

CLOVERLY ELEMENTARY (Area 4)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	112	77	113	79
Quantitative	111	75	117	86
Nonverbal	105	62	118	87
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.3	69	6.4	67
Reading Comprehension	4.4	68	6.6	71
Spelling	4.5	68	7.1	76
Capitalization	4.8	75	7.9	85
Punctuation	4.6	71	7.4	80
Language Usage	4.4	64	7.2	76
Map Reading	4.2	67	7.1	83
Reading Graphs & Tables	4.4	71	7.4	85
Knowledge & Use of Reference Materials	4.2	69	6.8	73
Math Concepts	4.0	59	7.3	87
Math Problem Solving	4.0	62	6.5	75

COLD SPRING ELEMENTARY (Area 3) Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	115	83	118	87
Quantitative	119	88	120	89
Nonverbal	111	75	118	87
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.6	78	6.8	76
Reading Comprehension	4.6	74	6.7	73
Spelling	5.1	79	7.2	77
Capitalization	5.4	85	7.6	81
Punctuation	5.3	83	7.2	77
Language Usage	5.2	80	7.2	76
Map Reading	4.6	78	6.9	79
Reading Graphs & Tables	5.1	86	7.5	87
Knowledge & Use of Reference Materials	4.6	81	7.1	79
Math Concepts	4.6	79	7.5	90
Math Problem Solving	4.7	87	7.0	85

COLLEGE GARDENS
ELEMENTARY (Area 3)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal 116	116	84	113	79
Quantitative	121	91	111	75
Nonverbal	115	83	113	79
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.5	75	6.4	67
Reading Comprehension	4.8	78	6.4	67
Spelling	5.2	81	6.9	72
Capitalization	5.6	88	7.0	72
Punctuation	5.7	88	6.7	68
Language Usage	5.2	80	6.9	71
Map Reading	4.7	81	6.6	73
Reading Graphs & Tables	5.1	86	6.9	78
Knowledge & Use of Reference Materials	4.6	81	6.8	73
Math Concepts	4.6	79	7.3	87
Math Problem Solving	4.8	89	6.4	72

CONGRESSIONAL ELEMENTARY (Area 3) Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	106	65	106	65
Quantitative	118	87	105	62
Nonverbal	117	86	111	75
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.0	59	5.8	52
Reading Comprehension	4.3	66	5.6	47
Spelling	4.7	72	5.9	54
Capitalization	5.6	88	6.4	62
Punctuation	5.2	81	6.4	63
Language Usage	4.8	72	6.2	58
Map Reading	5.0	86	6.3	66
Reading Graphs & Tables	5.3	89	6.2	62
Knowledge & Use of Reference Materials	4.6	81	6.3	64
Math Concepts	5.0	89	6.3	65
Math Problem Solving	5.0	92	5.5	44

CONNECTICUT PARK ELEMENTARY (Area 4) Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	106	65	108	69
Quantitative	111	75	112	77
Nonverbal	108	69	112	77
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.0	59	5.9	54
Reading Comprehension	4.0	57	5.8	52
Spelling	4.4	66	6.2	60
Capitalization	4.7	73	6.7	67
Punctuation	4.3	65	6.2	59
Language Usage	4.3	62	6.3	60
Map Reading	4.1	64	6.2	63
Reading Graphs & Tables	4.2	65	5.9	55
Knowledge & Use of Reference Materials	3.8	53	6.4	66
Math Concepts	3.9	56	6.0	57
Math Problem Solving	4.1	66	6.1	62

CRESTHAVEN ELEMENTARY (Area 2) Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	115	83	116	84
Quantitative	114	81	116	84
Nonverbal	112	77	117	86
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.4	72	6.6	72
Reading Comprehension	4.5	71	6.6	71
Spelling	4.6	70	6.7	69
Capitalization	4.9	77	7.2	75
Punctuation	4.5	69	6.6	67
Language Usage	4.6	68	7.2	76
Map Reading	4.4	73	6.8	77
Reading Graphs & Tables	4.5	74	6.9	78
Knowledge & Use of Reference Materials	4.1	65	6.8	73
Math Concepts	4.2	66	6.8	77
Math Problem Solving	4.3	75	6.5	75

DAMASCUS ELEMENTARY (Area 5)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	109	71	108	69
Quantitative	112	77	112	77
Nonverbal	108	69	112	77
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.1	62	6.0	57
Reading Comprehension	4.3	66	6.2	62
Spelling	4.6	70	6.5	65
Capitalization	4.7	73	7.3	77
Punctuation	4.9	77	7.0	73
Language Usage	4.4	64	6.8	69
Map Reading	4.3	70	6.4	68
Reading Graphs & Tables	4.4	71	6.6	72
Knowledge & Use of Reference Materials	4.1	65	6.5	68
Math Concepts	4.3	69	6.8	77
Math Problem Solving	4.2	70	6.3	69

DAMASCUS H.S. (Area 5)

Grade 7

Grade 9

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal			105	62
Quantitative			108	69
Nonverbal			109	71
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	7.6	50	9.3	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary			9.2	47
Reading Comprehension			9.1	47
Spelling			8.8	43
Capitalization			9.3	47
Punctuation			9.2	46
Language Usage			9.1	47
Map Reading			9.5	56
Reading Graphs & Tables			9.3	47
Knowledge & Use of Reference Materials			9.4	51
Math Concepts			9.5	49
Math Problem Solving			9.1	46

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50
Cognitive Abilities Test (CAT)		
Verbal	107	67
Quantitative	108	69
Achievement	School Average Standard Age Score (S.S.)	S.S. Expressed as National Percentile
Norm	50	50
Tests of Academic Progress (TAP)		
Social Studies	50	46
Mechanics of English	51	51
Science	52	56
Reading	51	50
Mathematics	53	60
Literature	52	55

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	113	79	118	87
Quantitative	116	84	119	88
Nonverbal	108	69	112	77
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.5	75	6.7	74
Reading Comprehension	4.5	71	6.7	73
Spelling	4.7	72	7.0	74
Capitalization	4.7	73	7.0	72
Punctuation	5.0	78	7.0	73
Language Usage	5.0	76	7.3	77
Map Reading	4.5	76	6.9	79
Reading Graphs & Tables	4.7	79	7.2	83
Knowledge & Use of Reference Materials	4.3	72	6.7	71
Math Concepts	4.5	76	7.1	83
Math Problem Solving	4.5	82	6.7	79

DIAMOND ELEMENTARY (Area 5)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	111	75	114	81
Quantitative	112	77	114	81
Nonverbal	110	73	115	83
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.6	78	6.5	70
Reading Comprehension	4.7	76	6.4	67
Spelling	5.2	81	6.7	69
Capitalization	5.4	85	6.8	69
Punctuation	5.4	84	6.5	65
Language Usage	4.9	74	6.8	69
Map Reading	4.8	83	6.6	73
Reading Graphs & Tables	5.2	88	6.7	74
Knowledge & Use of Reference Materials	4.8	85	6.8	73
Math Concepts	4.3	69	6.3	65
Math Problem Solving	4.4	79	6.3	69

DU FIEF ELEMENTARY (Area 3)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	117	86	111	75
Quantitative	121	91	111	75
Nonverbal	115	83	112	77
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.5	75	6.1	50
Reading Comprehension	4.5	71	6.1	60
Spelling	5.0	78	5.9	54
Capitalization	5.2	82	6.0	55
Punctuation	5.2	81	5.9	54
Language Usage	4.8	72	6.4	62
Map Reading	4.7	81	6.1	61
Reading Graphs & Tables	4.8	81	6.4	67
Knowledge & Use of Reference Materials	4.4	76	6.1	59
Math Concepts	4.4	73	6.3	65
Math Problem Solving	4.5	82	5.8	52

EAST SILVER SPRING ELEM. (Area 2) Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	113	79		
Quantitative	113	79		
Nonverbal	111	75		
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.2	65		
Reading Comprehension	4.3	66		
Spelling	4.8	74		
Capitalization	4.6	71		
Punctuation	4.4	67		
Language Usage	4.5	66		
Map Reading	4.2	67		
Reading Graphs & Tables	4.4	71		
Knowledge & Use of Reference Materials	4.0	61		
Math Concepts	3.9	56		
Math Problem Solving	4.2	70		

EASTERN JR. HS (Area 2)

Grade 7

Grade 9

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	104	60	105	62
Quantitative	107	67	108	69
Nonverbal	106	65	109	71
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	7.6	50	9.3	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	7.6	47	9.2	47
Reading Comprehension	7.5	46	9.1	47
Spelling	7.6	48	9.0	45
Capitalization	7.8	51	9.6	51
Punctuation	7.4	45	9.4	50
Language Usage	7.5	47	9.1	47
Map Reading	7.8	51	9.1	49
Reading Graphs & Tables	7.6	47	9.3	47
Knowledge & Use of Reference Materials	7.5	46	9.1	45
Math Concepts	7.9	53	9.5	49
Math Problem Solving	7.5	45	9.0	44

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50
Cognitive Abilities Test (CAT)		
Verbal	104	60
Quantitative	107	67
Achievement	School Average Standard Age Score (S.S.)	S.S. Expressed as National Percentile
Norm	50	50
Tests of Academic Progress (TAP)		
Social Studies	50	46
Mechanics of English	51	51
Science	51	52
Reading	50	47
Mathematics	53	60
Literature	50	46

ENGLISH MANOR ELEMENTARY (Area 4) Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	115	83	109	71
Quantitative	117	86	110	73
Nonverbal	111	86	111	75
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.3	69	6.0	57
Reading Comprehension	4.3	66	6.4	67
Spelling	4.5	68	6.5	65
Capitalization	4.8	75	7.0	72
Punctuation	4.5	69	6.6	67
Language Usage	4.3	62	6.2	58
Map Reading	4.4	73	6.1	61
Reading Graphs & Tables	4.5	74	6.2	62
Knowledge & Use of Reference Materials	4.3	72	6.5	68
Math Concepts	4.3	69	6.4	67
Math Problem Solving	4.2	70	6.0	59

PAIKLAND ELEMENTARY (Area 4)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	112	77	112	77
Quantitative	116	84	111	75
Nonverbal	110	73	111	75
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.5	75	6.2	62
Reading Comprehension	4.3	66	6.2	62
Spelling	4.7	72	6.8	71
Capitalization	4.8	75	6.7	77
Punctuation	4.4	67	6.4	63
Language Usage	4.7	70	6.7	67
Map Reading	4.4	73	6.5	71
Reading Graphs & Tables	4.4	71	6.8	76
Knowledge & Use of Reference Materials	4.1	65	6.5	68
Math Concepts	4.3	69	6.6	72
Math Problem Solving	4.1	66	6.4	72

FALLSMEAD ELEMENTARY (Area 3)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	119	88	116	84
Quantitative	120	89	117	86
Nonverbal	115	84	111	75
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.8	82	6.7	74
Reading Comprehension	4.8	78	6.7	73
Spelling	5.5	86	6.8	71
Capitalization	5.6	88	7.2	75
Punctuation	5.9	90	7.0	73
Language Usage	5.4	83	7.2	76
Map Reading	5.0	86	6.5	71
Reading Graphs & Tables	5.2	88	6.9	73
Knowledge & Use of Reference Materials	4.8	85	6.8	73
Math Concepts	4.5	76	6.9	79
Math Problem Solving	4.7	87	6.8	81

FARMLAND ELEMENTARY (Area 3)
Grade 3
Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	122	92	118	87
Quantitative	123	92	117	86
Nonverbal	118	87	117	86
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	5.3	91	6.7	74
Reading Comprehension	5.3	88	6.9	78
Spelling	5.4	84	6.6	67
Capitalization	6.0	94	7.1	74
Punctuation	6.1	93	7.4	80
Language Usage	5.4	83	7.1	74
Map Reading	5.6	93	7.1	83
Reading Graphs & Tables	5.7	93	7.5	87
Knowledge & Use of Reference Materials	5.1	90	7.0	77
Math Concepts	5.3	93	7.2	85
Math Problem Solving	5.2	94	6.8	81

FARQUHAR MIDDLE (Area 4)
Grade 7
Grade 9

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	105	62		
Quantitative	106	65		
Nonverbal	107	67		
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	7.6	50	9.3	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	7.8	51		
Reading Comprehension	7.8	52		
Spelling	7.8	51		
Capitalization	7.9	53		
Punctuation	7.8	51		
Language Usage	7.9	53		
Map Reading	8.0	55		
Reading Graphs & Tables	8.1	58		
Knowledge & Use of Reference Materials	7.9	53		
Math Concepts	8.0	56		
Math Problem Solving	7.7	49		

FIELDS ROAD ELEMENTARY (Area 5)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	108	69	104	60
Quantitative	110	73	104	60
Nonverbal	108	69	106	65
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.0	59	5.4	42
Reading Comprehension	4.1	60	5.4	42
Spelling	4.8	74	5.6	48
Capitalization	4.7	73	5.6	48
Punctuation	4.6	71	5.7	49
Language Usage	4.6	68	5.9	53
Map Reading	4.0	60	5.7	49
Reading Graphs & Tables	4.1	61	5.6	47
Knowledge & Use of Reference Materials	4.0	61	5.7	49
Math Concepts	3.8	52	5.4	41
Math Problem Solving	3.9	57	5.5	44

FLOWER VALLEY ELEMENTARY (Area 4) **Grade 3**

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	116	84	116	84
Quantitative	120	89	115	83
Nonverbal	115	83	114	81
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	5.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.4	72	6.5	70
Reading Comprehension	4.5	71	6.5	69
Spelling	4.9	76	6.9	72
Capitalization	5.1	81	6.9	71
Punctuation	5.1	80	6.5	65
Language Usage	4.8	72	6.8	69
Map Reading	4.6	78	6.7	75
Reading Graphs & Tables	4.9	83	6.8	76
Knowledge & Use of Reference Materials	4.4	76	6.6	70
Math Concepts	4.4	73	6.7	75
Math Problem Solving	4.5	82	6.6	77

FOREST GROVE ELEMENTARY (Area 2) Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	118	87	109	71
Quantitative	120	89	109	71
Nonverbal	117	86	110	73
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.8	82	5.9	54
Reading Comprehension	4.7	76	5.9	55
Spelling	5.1	79	6.1	58
Capitalization	5.6	88	5.8	52
Punctuation	5.4	84	5.6	47
Language Usage	4.7	70	6.1	57
Map Reading	4.8	83	6.2	63
Reading Graphs & Tables	4.7	79	6.3	65
Knowledge & Use of Reference Materials	4.8	85	6.2	61
Math Concepts	4.8	84	6.4	67
Math Problem Solving	4.7	87	6.1	62

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	113	79	107	67
Quantitative	117	86	107	67
Nonverbal	111	75	110	73
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.1	62	5.8	52
Reading Comprehension	4.1	60	5.7	50
Spelling	4.7	72	6.1	58
Capitalization	4.7	73	6.5	64
Punctuation	4.4	67	6.2	59
Language Usage	4.6	68	6.1	57
Map Reading	4.6	78	6.0	58
Reading Graphs & Tables	4.9	83	6.5	69
Knowledge & Use of Reference Materials	4.2	69	6.0	57
Math Concepts	4.2	66	6.2	62
Math Problem Solving	4.2	70	5.9	55

FOUR CORNERS ELEMENTARY (Area 2) Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	111	75	109	71
Quantitative	110	73	111	75
Nonverbal	111	75	114	81
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.3	69	6.1	60
Reading Comprehension	4.4	68	6.3	64
Spelling	4.6	70	6.3	62
Capitalization	4.0	57	6.3	61
Punctuation	4.4	67	6.1	58
Language Usage	4.6	68	6.3	60
Map Reading	4.5	76	6.4	68
Reading Graphs & Tables	4.5	74	6.7	74
Knowledge & Use of Reference Materials	4.3	72	6.3	64
Math Concepts	4.2	66	7.0	81
Math Problem Solving	4.2	70	6.4	72

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	107	67	100	50
Quantitative	109	71	102	55
Nonverbal	107	67	103	57
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	3.9	55	5.5	44
Reading Comprehension	4.1	60	5.5	44
Spelling	4.5	68	5.8	52
Capitalization	5.3	84	5.8	52
Punctuation	5.2	81	5.7	49
Language Usage	4.8	72	5.7	50
Map Reading	4.0	60	5.8	52
Reading Graphs & Tables	4.3	68	6.1	60
Knowledge & Use of Reference Materials	4.1	65	5.9	54
Math Concepts	4.1	63	5.9	54
Math Problem Solving	4.0	62	5.6	47

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	111	75		
Quantitative	114	81		
Nonverbal	113	79		
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	7.6	50	9.3	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	8.5	67		
Reading Comprehension	8.4	63		
Spelling	8.5	64		
Capitalization	8.8	66		
Punctuation	8.6	64		
Language Usage	8.6	63		
Map Reading	9.0	74		
Reading Graphs & Tables	8.5	66		
Knowledge & Use of Reference Materials	8.5	65		
Math Concepts	8.9	73		
Math Problem Solving	8.3	64		

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	104	60	100	50
Quantitative	107	67	101	52
Nonverbal	106	65	105	62
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	3.7	49	5.0	33
Reading Comprehension	4.0	57	5.3	39
Spelling	4.1	59	5.2	39
Capitalization	4.3	64	5.6	48
Punctuation	4.4	67	5.4	43
Language Usage	3.8	52	5.2	40
Map Reading	4.0	60	5.7	49
Reading Graphs & Tables	4.2	65	5.6	47
Knowledge & Use of Reference Materials	3.9	57	5.5	44
Math Concepts	3.9	56	5.7	49
Math Problem Solving	3.7	49	5.3	39

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50
Cognitive Abilities Test (CAT)		
Verbal	108	69
Quantitative	108	69
Achievement	School Average Standard Age Score (S.S.)	S.S. Expressed as National Percentile
Norm	50	50
Tests of Academic Progress (TAP)		
Social Studies	51	51
Mechanics of English	52	55
Science	53	61
Reading	52	55
Mathematics	53	60
Literature	52	55

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	102	55	103	57
Quantitative	106	65	104	60
Nonverbal	109	71	108	69
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	7.6	50	9.3	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	7.4	43	9.0	43
Reading Comprehension	7.3	43	8.8	42
Spelling	7.5	47	9.0	45
Capitalization	7.6	48	9.2	46
Punctuation	7.6	48	8.9	42
Language Usage	7.5	47	8.7	42
Map Reading	8.0	55	9.3	52
Reading Graphs & Tables	7.7	49	9.1	44
Knowledge & Use of Reference Materials	7.7	49	9.1	45
Math Concepts	8.0	56	9.2	44
Math Problem Solving	7.5	45	8.8	40

GALWAY ELEMENTARY (Area 4)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	113	79	113	79
Quantitative	115	83	115	83
Nonverbal	112	77	114	81
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.2	65	6.5	70
Reading Comprehension	4.4	68	6.5	69
Spelling	4.8	74	7.0	74
Capitalization	5.0	79	7.3	77
Punctuation	4.7	73	7.0	73
Language Usage	4.5	66	7.2	76
Map Reading	4.4	73	7.4	87
Reading Graphs & Tables	4.5	74	7.7	89
Knowledge & Use of Reference Materials	4.2	69	6.9	75
Math Concepts	4.2	66	7.3	87
Math Problem Solving	4.0	62	6.4	72

GARRETT PARK ELEMENTARY (Area 3)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	119	88	120	89
Quantitative	120	89	117	86
Nonverbal	115	83	119	88
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.7	80	6.8	76
Reading Comprehension	4.9	81	6.9	78
Spelling	5.1	79	7.0	74
Capitalization	5.0	79	7.1	74
Punctuation	5.2	81	7.0	73
Language Usage	5.2	80	7.4	79
Map Reading	4.7	81	7.0	81
Reading Graphs & Tables	4.9	83	7.1	81
Knowledge & Use of Reference Materials	4.6	81	7.0	77
Math Concepts	4.4	73	6.7	75
Math Problem Solving	4.4	79	6.8	81

GEORGETOWN HILL ELEMENTARY (Area 3)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	116	84	116	84
Quantitative	118	87	121	91
Nonverbal	111	75	119	88
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.5	75	6.5	70
Reading Comprehension	4.6	74	6.6	71
Spelling	5.1	79	6.9	72
Capitalization	5.1	81	7.3	77
Punctuation	5.3	83	7.0	73
Language Usage	5.0	76	7.1	74
Map Reading	4.5	76	6.9	79
Reading Graphs & Tables	4.6	76	7.3	84
Knowledge & Use of Reference Materials	4.4	76	6.6	70
Math Concepts	4.4	73	7.3	87
Math Problem Solving	4.3	75	6.7	79

GEORGIAN FOREST ELEMENTARY (Area 2)
Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	111	75	112	77
Quantitative	118	87	113	79
Nonverbal	114	81	116	84
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.2	65	6.6	72
Reading Comprehension	4.4	68	6.4	67
Spelling	4.8	74	7.0	74
Capitalization	5.1	81	7.6	81
Punctuation	4.8	75	7.4	80
Language Usage	4.8	72	7.2	76
Map Reading	4.5	76	7.2	84
Reading Graphs & Tables	4.5	74	7.3	84
Knowledge & Use of Reference Materials	4.2	69	6.7	71
Math Concepts	4.2	66	6.8	77
Math Problem Solving	4.2	70	6.7	79

GERMANTOWN ELEMENTARY (Area 5)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	113	79	110	73
Quantitative	113	79	107	67
Nonverbal	111	75	112	77
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.8	82	6.9	78
Reading Comprehension	4.5	71	6.0	57
Spelling	5.1	79	6.7	69
Capitalization	5.3	84	6.5	64
Punctuation	5.5	86	6.3	61
Language Usage	5.0	76	6.4	62
Map Reading	4.5	76	6.4	68
Reading Graphs & Tables	4.9	83	6.4	67
Knowledge & Use of Reference Materials	4.4	76	6.5	68
Math Concepts	4.3	69	6.5	70
Math Problem Solving	4.8	89	6.2	65

GLEN HAVEN ELEMENTARY (Area 2)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	113	79	110	73
Quantitative	115	83	109	71
Nonverbal	113	79	111	75
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.4	72	6.0	57
Reading Comprehension	4.5	71	6.1	60
Spelling	4.7	72	6.4	64
Capitalization	5.0	79	6.2	59
Punctuation	4.7	73	6.4	63
Language Usage	4.4	64	6.2	58
Map Reading	4.6	78	6.5	71
Reading Graphs & Tables	4.5	74	6.5	69
Knowledge & Use of Reference Materials	4.2	69	6.4	66
Math Concepts	4.2	66	6.8	77
Math Problem Solving	4.4	79	6.2	65

GLENALLEN ELEMENTARY (Area 2)
Grade 3
Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	111	75	108	69
Quantitative	117	86	105	62
Nonverbal	111	75	106	65
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.2	65	6.0	57
Reading Comprehension	4.3	66	6.1	60
Spelling	4.7	72	6.0	56
Capitalization	4.7	73	6.1	57
Punctuation	4.6	71	6.0	56
Language Usage	4.4	64	6.0	55
Map Reading	4.2	67	6.1	61
Reading Graphs & Tables	4.4	71	6.1	60
Knowledge & Use of Reference Materials	4.2	69	6.0	57
Math Concepts	4.1	63	6.2	62
Math Problem Solving	4.1	66	5.6	47

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	115	83	112	77
Quantitative	116	84	109	71
Nonverbal	113	79	112	77
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.4	72	6.2	62
Reading Comprehension	4.5	71	6.3	64
Spelling	5.1	79	6.3	62
Capitalization	5.2	82	6.3	61
Punctuation	5.0	78	6.2	59
Language Usage	4.5	66	6.4	62
Map Reading	4.6	78	6.6	73
Reading Graphs & Tables	4.8	81	6.4	67
Knowledge & Use of Reference Materials	4.5	79	6.4	66
Math Concepts	4.4	73	6.3	65
Math Problem Solving	4.1	66	6.0	59

GROSVENOR ELEMENTARY (Area 1)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	116	84	116	84
Quantitative	123	92	114	81
Nonverbal	116	84	114	81
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.6	78	6.8	76
Reading Comprehension	4.5	71	6.8	76
Spelling	4.8	74	6.9	72
Capitalization	5.1	81	6.8	69
Punctuation	4.9	77	6.7	68
Language Usage	5.1	78	7.3	77
Map Reading	4.7	81	6.8	77
Reading Graphs & Tables	5.0	84	7.1	81
Knowledge & Use of Reference Materials	4.4	76	6.7	71
Math Concepts	4.6	79	6.6	72
Math Problem Solving	4.6	85	6.3	69

HARMONY HILLS ELEMENTARY (Area 4)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	111	75	108	69
Quantitative	115	83	112	77
Nonverbal	109	71	111	75
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.1	62	6.5	70
Reading Comprehension	4.2	63	5.7	50
Spelling	4.9	76	6.1	58
Capitalization	4.8	75	6.9	71
Punctuation	4.9	77	6.7	68
Language Usage	4.6	68	6.4	62
Map Reading	4.1	64	6.7	75
Reading Graphs & Tables	4.5	74	7.5	87
Knowledge & Use of Reference Materials	4.3	72	6.2	61
Math Concepts	4.5	76	6.8	77
Math Problem Solving	4.1	66	6.2	65

HIGHLAND ELEMENTARY (Area 1)
Grade 3
Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	105	62	103	57
Quantitative	108	69	106	65
Nonverbal	104	60	109	71
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	3.9	55	6.1	60
Reading Comprehension	4.1	60	5.5	44
Spelling	4.6	70	6.0	56
Capitalization	4.4	66	6.2	59
Punctuation	4.0	57	6.3	61
Language Usage	4.1	58	6.2	58
Map Reading	3.9	56	6.3	66
Reading Graphs & Tables	4.0	58	6.4	67
Knowledge & Use of Reference Materials	3.7	49	6.1	59
Math Concepts	4.0	59	6.9	79
Math Problem Solving	3.9	57	6.0	59

HIGHLAND VIEW ELEMENTARY (Area 2) Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	112	77	110	73
Quantitative	108	69	110	73
Nonverbal	109	71	109	71
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.4	72	6.4	67
Reading Comprehension	4.4	68	6.4	67
Spelling	4.9	76	6.5	65
Capitalization	4.9	77	7.2	75
Punctuation	4.7	73	6.9	72
Language Usage	4.5	66	7.0	72
Map Reading	4.6	78	6.8	77
Reading Graphs & Tables	5.0	84	6.8	76
Knowledge & Use of Reference Materials	4.6	81	6.8	73
Math Concepts	4.8	84	7.1	83
Math Problem Solving	4.2	70	6.3	69

HERBERT HOOVER JR. HS (Area 3)

Grade 7

Grade 9

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	113	79	113	79
Quantitative	119	88	119	88
Nonverbal	117	86	119	88
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	7.6	50	9.3	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	8.5	67	10.2	67
Reading Comprehension	8.3	61	9.9	60
Spelling	8.5	63	9.9	58
Capitalization	9.2	71	10.6	64
Punctuation	9.1	72	10.2	62
Language Usage	8.9	67	10.1	59
Map Reading	9.0	74	10.5	73
Reading Graphs & Tables	8.9	74	10.4	65
Knowledge & Use of Reference Materials	8.8	70	10.2	65
Math Concepts	9.6	85	10.6	66
Math Problem Solving	8.6	72	10.0	63

HUNGERFORD PARK ELEMENTARY (Area 3) Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	112	77	110	73
Quantitative	115	83	111	75
Nonverbal	112	77	113	79
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary 4.3	4.3	69	6.2	62
Reading Comprehension	4.7	76	6.2	62
Spelling	4.7	72	6.6	67
Capitalization	5.1	81	6.6	66
Punctuation	5.0	78	6.4	63
Language Usage	4.8	72	6.3	60
Map Reading	4.5	76	6.5	71
Reading Graphs & Tables	4.7	79	7.0	79
Knowledge & Use of Reference Materials	4.4	76	6.6	70
Math Concepts	4.5	76	6.9	79
Math Problem Solving	4.5	82	6.3	69

JACKSON ROAD ELEMENTARY (Area 2) Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	111	75	111	75
Quantitative	114	81	112	77
Nonverbal	109		114	81
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.2	65	6.3	65
Reading Comprehension	4.1	60	6.3	64
Spelling	4.7	72	6.7	69
Capitalization	4.9	77	7.0	72
Punctuation	4.4	67	6.7	68
Language Usage	4.4	64	6.5	63
Map Reading	4.3	70	6.9	79
Reading Graphs & Tables	4.5	74	7.1	81
Knowledge & Use of Reference Materials	4.1	65	6.6	70
Math Concepts	4.1	63	7.5	90
Math Problem Solving	4.0	62	6.4	72

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50
Cognitive Abilities Test (CAT)		
Verbal	113	79
Quantitative	113	79
Achievement	School Average Standard Age Score (S.S.)	S.S. Expressed as National Percentile
Norm	50	50
Tests of Academic Progress (TAP)		
Social Studies	56	67
Mechanics of English	56	68
Science	56	72
Reading	56	70
Mathematics	57	74
Literature	56	68

KEMP MILL ELEMENTARY (Area 2)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	114	81	112	77
Quantitative	120	89	114	81
Nonverbal	114	81	109	71
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	5.5	94	6.4	67
Reading Comprehension	4.7	76	6.2	62
Spelling	5.1	79	6.5	65
Capitalization	6.0	94	7.0	72
Punctuation	5.6	87	6.8	70
Language Usage	5.1	78	6.7	67
Map Reading	5.0	86	6.5	71
Reading Graphs & Tables	5.2	88	6.3	65
Knowledge & Use of Reference Materials	4.9	87	6.6	70
Math Concepts	5.0	89	6.3	65
Math Problem Solving	5.2	94	6.3	69

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50
Cognitive Abilities Test (CAT)		
Verbal	107	67
Quantitative	111	75
Achievement	School Average Standard Age Score (S.S.)	S.S. Expressed as National Percentile
Norm	50	50
Tests of Academic Progress (TAP)		
Social Studies	53	58
Mechanics of English	52	55
Science	54	64
Reading	52	55
Mathematics	55	69
Literature	52	55

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	109	71	103	57
Quantitative	109	71	102	55
Nonverbal	108	69	105	62
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	3.9	55	5.7	49
Reading Comprehension	3.9	55	5.9	55
Spelling	4.3	64	5.8	52
Capitalization	4.7	73	6.9	71
Punctuation	4.5	69	6.6	67
Language Usage	3.9	54	6.1	57
Map Reading	3.9	56	5.7	49
Reading Graphs & Tables	4.2	65	6.2	62
Knowledge & Use of Reference Materials	4.0	61	6.1	59
Math Concepts	3.9	56	5.7	49
Math Problem Solving	3.9	57	5.8	52

KENSINGTON JR. HS (Area 1)

Grade 7

Grade 9

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	105	62	109	71
Quantitative	108	65	111	75
Nonverbal	107	64	112	77
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	7.6	50	9.3	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	7.8	51	9.8	59
Reading Comprehension	7.5	46	9.3	50
Spelling	7.6	48	9.5	52
Capitalization	8.1	56	10.2	59
Punctuation	7.5	47	10.0	59
Language Usage	7.7	50	9.7	54
Map Reading	7.8	51	9.4	54
Reading Graphs & Tables	7.7	49	9.8	56
Knowledge & Use of Reference Materials	7.7	49	9.5	53
Math Concepts	8.3	62	10.0	56
Math Problem Solving	7.7	49	9.1	46

FRANCIS SCOTT KEY (Area 2)
JR. HS

Grade 7

Grade 9

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	105	62	107	67
Quantitative	108	69	109	71
Nonverbal	108	69	111	75
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	7.6	50	9.3	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	7.8	51	9.5	52
Reading Comprehension	7.6	48	9.3	50
Spelling	7.7	50	9.4	51
Capitalization	8.1	56	10.2	59
Punctuation	8.1	56	9.9	58
Language Usage	8.3	58	9.9	57
Map Reading	8.0	55	9.6	57
Reading Graphs & Tables	7.9	53	9.6	52
Knowledge & Use of Reference Materials	7.9	53	9.6	55
Math Concepts	8.2	60	9.5	49
Math Problem Solving	7.7	49	9.3	50

LAKE NORMANDY ELEMENTARY (Area 3) Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	117	86	124	93
Quantitative	119	88	125	94
Nonverbal	114	81	120	89
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.6	78	7.0	80
Reading Comprehension	4.6	74	7.1	81
Spelling	5.2	81	7.2	77
Capitalization	5.3	84	7.3	77
Punctuation	5.2	81	7.0	73
Language Usage	5.0	76	7.4	79
Map Reading	4.4	73	7.2	84
Reading Graphs & Tables	4.7	79	7.5	87
Knowledge & Use of Reference Materials	4.4	76	7.2	81
Math Concepts	4.4	73	7.6	91
Math Problem Solving	4.3	75	7.1	87

LAKEWOOD ELEMENTARY (Area 3)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	113	79	110	73
Quantitative	116	84	110	73
Nonverbal	114	81	115	83
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.5	75	5.9	54
Reading Comprehension	4.4	68	5.9	55
Spelling	4.9	76	6.2	60
Capitalization	5.0	79	6.7	67
Punctuation	5.0	78	6.4	63
Language Usage	4.8	72	6.6	65
Map Reading	4.6	78	6.3	66
Reading Graphs & Tables	4.8	81	6.5	69
Knowledge & Use of Reference Materials	4.5	79	6.1	59
Math Concepts	4.3	69	6.5	70
Math Problem Solving	4.3	75	6.1	62

LARCHMONT ELEMENTARY (Area 1)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	112	77	105	62
Quantitative	111	75	106	65
Nonverbal	105	62	107	67
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.4	72	5.7	49
Reading Comprehension	4.3	66	5.6	47
Spelling	4.6	70	5.9	54
Capitalization	5.1	81	6.3	61
Punctuation	4.8	75	5.8	51
Language Usage	4.3	62	6.0	55
Map Reading	4.3	70	5.9	55
Reading Graphs & Tables	4.6	76	6.1	60
Knowledge & Use of Reference Materials	4.1	65	5.8	52
Math Concepts	4.1	63	5.9	54
Math Problem Solving	4.1	66	6.0	59

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	108	69	110	73
Quantitative	114	81	112	77
Nonverbal	111	75	111	75
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.1	62	6.2	62
Reading Comprehension	4.1	60	6.1	60
Spelling	4.6	70	6.3	62
Capitalization	4.8	75	6.6	66
Punctuation	4.8	75	6.5	65
Language Usage	4.3	62	6.2	58
Map Reading	4.2	67	6.3	66
Reading Graphs & Tables	4.5	74	6.5	69
Knowledge & Use of Reference Materials	4.2	69	6.1	59
Math Concepts	4.2	66	6.5	70
Math Problem Solving	4.1	66	6.1	62

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	109	71	109	71
Quantitative	111	75	111	75
Nonverbal	110	73	112	77
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	7.6	50	9.3	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	8.2	60	10.3	69
Reading Comprehension	8.0	56	9.5	53
Spelling	8.5	63	9.5	52
Capitalization	9.0	68	9.9	56
Punctuation	8.3	59	9.8	56
Language Usage	8.4	60	9.5	52
Map Reading	8.6	66	9.9	63
Reading Graphs & Tables	8.5	66	10.0	59
Knowledge & Use of Reference Materials	8.5	65	9.8	58
Math Concepts	8.5	66	9.9	55
Math Problem Solving	8.0	56	9.4	51

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	114	81	116	84
Quantitative	115	83	117	86
Nonverbal	114	81	118	87
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	7.6	50	9.3	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	8.8	73	10.4	71
Reading Comprehension	8.6	68	10.1	64
Spelling	8.5	63	10.1	61
Capitalization	8.7	64	10.4	62
Punctuation	8.7	66	10.3	64
Language Usage	8.8	66	10.5	65
Map Reading	8.6	66	10.4	71
Reading Graphs & Tables	8.7	70	10.5	67
Knowledge & Use of Reference Materials	8.7	69	10.3	67
Math Concepts	9.1	76	10.6	66
Math Problem Solving	8.4	67	10.1	65

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	100	50	101	52
Quantitative	104	60	103	57
Nonverbal	105	62	106	65
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	3.7	49	5.3	40
Reading Comprehension	3.6	47	5.3	39
Spelling	4.1	59	5.8	52
Capitalization	3.9	55	5.9	54
Punctuation	3.9	54	5.6	47
Language Usage	3.8	52	5.4	44
Map Reading	3.7	49	5.7	49
Reading Graphs & Tables	4.0	58	5.7	49
Knowledge & Use of Reference Materials	3.8	53	5.6	47
Math Concepts	3.7	49	5.5	44
Math Problem Solving	3.5	42	5.5	44

LUXMANOR ELEMENTARY (Area 3)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	118	87	114	81
Quantitative	120	89	115	83
Nonverbal	118	87	112	77
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.8	82	6.9	78
Reading Comprehension	4.6	74	6.3	64
Spelling	5.2	81	6.8	71
Capitalization	5.5	87	7.1	74
Punctuation	5.4	84	7.3	78
Language Usage	5.3	81	7.0	72
Map Reading	4.6	78	6.4	68
Reading Graphs & Tables	5.2	88	6.5	69
Knowledge & Use of Reference Materials	4.7	83	6.6	70
Math Concepts	4.5	76	6.9	79
Math Problem Solving	4.5	82	6.4	72

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	112	77	116	84
Quantitative	114	81	110	73
Nonverbal	113	79	113	79
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.3	69	6.7	74
Reading Comprehension	4.4	68	6.6	71
Spelling	4.6	70	6.4	64
Capitalization	4.2	62	6.9	71
Punctuation	4.1	60	7.2	77
Language Usage	4.6	68	7.3	77
Map Reading	4.5	76	6.5	71
Reading Graphs & Tables	4.7	79	6.8	76
Knowledge & Use of Reference Materials	4.1	65	6.7	71
Math Concepts	4.4	73	6.4	67
Math Problem Solving	4.4	79	6.3	69

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50
Cognitive Abilities Test (CAT)		
Verbal	109	71
Quantitative	112	77
Achievement	School Average Standard Age Score (S.S.)	S.S. Expressed as National Percentile
Norm	50	50
Tests of Academic Progress (TAP)		
Social Studies	53	58
Mechanics of English	54	62
Science	54	64
Reading	53	60
Mathematics	55	69
Literature	53	57

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	97	43	99	48
Quantitative	99	48	98	45
Nonverbal	100	50	102	55
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	3.3	38	5.0	33
Reading Comprehension	3.4	41	5.3	39
Spelling	3.8	52	5.0	35
Capitalization	3.6	47	5.3	41
Punctuation	3.8	52	5.2	39
Language Usage	3.5	45	5.2	40
Map Reading	3.4	39	5.6	47
Reading Graphs & Tables	3.6	46	5.2	37
Knowledge & Use of Reference Materials	3.4	39	5.5	44
Math Concepts	3.3	34	5.2	36
Math Problem Solving	3.2	33	5.2	36

225

MEADOW HALL ELEMENTARY (Area 3)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	109	71	113	79
Quantitative	111	75	109	71
Nonverbal	107	67	112	77
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.6	78	6.1	60
Reading Comprehension	4.3	66	6.5	69
Spelling	4.8	74	6.4	64
Capitalization	5.3	84	6.9	71
Punctuation	5.0	78	6.7	68
Language Usage	4.9	74	6.6	65
Map Reading	4.3	70	6.6	73
Reading Graphs & Tables	4.8	81	6.6	72
Knowledge & Use of Reference Materials	4.5	79	6.8	73
Math Concepts	4.3	69	6.4	67
Math Problem Solving	4.2	70	6.2	65

MILL CREEK TOWNE ELEMENTARY (Area 4) Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	115	83	110	73
Quantitative	117	86	110	73
Nonverbal	115	83	111	75
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.5	75	5.8	52
Reading Comprehension	4.7	76	5.9	55
Spelling	4.9	76	6.0	56
Capitalization	5.4	85	6.1	57
Punctuation	5.4	84	6.1	58
Language Usage	4.8	72	5.9	53
Map Reading	4.7	81	6.3	66
Reading Graphs & Tables	4.9	83	6.2	62
Knowledge & Use of Reference Materials	4.5	79	6.0	57
Math Concepts	4.4	73	6.2	62
Math Problem Solving	4.4	79	5.9	55

237

MONOCACY ELEMENTARY (Area 5)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	106	65	107	67
Quantitative	105	62	108	69
Nonverbal	109	71	108	69
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.0	59	5.7	49
Reading Comprehension	4.3	66	5.8	52
Spelling	4.4	66	5.9	54
Capitalization	5.0	79	6.8	69
Punctuation	4.8	75	6.2	59
Language Usage	4.5	66	6.0	55
Map Reading	3.9	56	5.8	52
Reading Graphs & Tables	4.2	65	5.7	49
Knowledge & Use of Reference Materials	4.0	61	6.1	59
Math Concepts	3.9	56	5.7	49
Math Problem Solving	3.8	53	5.6	47

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50
Cognitive Abilities Test (CAT)		
Verbal	108	69
Quantitative	108	69
Achievement	School Average Standard Age Score (S.S.)	S.S. Expressed as National Percentile
Norm	50	50
Tests of Academic Progress (TAP)		
Social Studies	50	46
Mechanics of English	51	51
Science	51	52
Reading	51	50
Mathematics	52	57
Literature	52	55

MONTGOMERY VILLAGE JR. H.S. (Area 5) Grade 7

Grade 9

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	109	71	110	73
Quantitative	109	71	111	75
Nonverbal	111	75	114	81
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	7.6	50	9.3	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	8.2	60	9.9	61
Reading Comprehension	7.9	54	9.8	58
Spelling	7.9	53	9.4	51
Capitalization	8.4	60	9.9	56
Punctuation	8.1	56	9.7	54
Language Usage	8.3	58	9.8	55
Map Reading	8.5	64	10.1	66
Reading Graphs & Tables	8.3	62	10.0	59
Knowledge & Use of Reference Materials	8.1	58	9.8	58
Math Concepts	8.3	62	10.1	58
Math Problem Solving	7.8	52	9.5	53

191240

MONTROSE ELEMENTARY (Area 3)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	104	60	103	57
Quantitative	107	67	104	60
Nonverbal	108	69	105	62
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.5	75	5.7	49
Reading Comprehension	3.9	55	5.5	44
Spelling	4.4	66	6.2	60
Capitalization	4.8	75	5.9	54
Punctuation	4.9	77	6.0	56
Language Usage	4.6	68	6.2	58
Map Reading	4.3	70	5.8	52
Reading Graphs & Tables	4.7	79	6.2	62
Knowledge & Use of Reference Materials	4.3	72	6.3	64
Math Concepts	4.2	66	5.9	54
Math Problem Solving	3.9	57	5.9	55

241

NEW HAMPSHIRE ESTATES
ELEMENTARY (Area 2)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	105	62		
Quantitative	106	65		
Nonverbal	107	67		
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	3.6	47		
Reading Comprehension	3.9	55		
Spelling	4.6	70		
Capitalization	4.7	73		
Punctuation	4.7	73		
Language Usage	4.3	62		
Map Reading	4.0	60		
Reading Graphs & Tables	4.3	68		
Knowledge & Use of Reference Materials	4.0	61		
Math Concepts	4.3	69		
Math Problem Solving	4.0	62		

NEWPORT MIDDLE (Area 1)

Grade 7

Grade 9

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	102	55	104	60
Quantitative	103	57	106	65
Nonverbal	105	62	109	71
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	7.6	50	9.3	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	7.4	43	9.2	47
Reading Comprehension	7.3	43	9.1	47
Spelling	7.1	41	8.7	42
Capitalization	7.4	45	9.6	51
Punctuation	7.1	41	9.5	51
Language Usage	7.5	47	9.3	49
Map Reading	7.5	46	9.2	50
Reading Graphs & Tables	7.8	51	9.5	50
Knowledge & Use of Reference Materials	7.6	47	9.1	45
Math Concepts	7.7	49	9.3	45
Math Problem Solving	7.6	47	8.8	40

243

NORTH BETHESDA JR. HS (Area 1)

Grade 7

Grade 9

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	113	79	113	79
Quantitative	114	81	116	84
Nonverbal	114	81	116	84
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	7.6	50	9.3	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	8.5	67	10.2	67
Reading Comprehension	8.4	63	10.0	62
Spelling	8.4	61	9.9	58
Capitalization	9.1	70	10.5	63
Punctuation	8.9	69	10.3	64
Language Usage	8.7	64	10.2	61
Map Reading	8.8	70	10.3	70
Reading Graphs & Tables	8.6	68	10.3	64
Knowledge & Use of Reference Materials	8.5	65	10.0	61
Math Concepts	8.8	71	10.2	59
Math Problem Solving	8.4	67	9.8	59

NORTH CHEVY CHASE ELEM. (Area 1) Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	112	77	114	81
Quantitative	117	86	113	79
Nonverbal	114	81	112	77
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.6	78	7.0	80
Reading Comprehension	4.5	71	7.0	80
Spelling	5.0	78	7.2	77
Capitalization	4.8	75	7.5	80
Punctuation	5.2	81	7.1	75
Language Usage	5.0	76	7.4	79
Map Reading	4.8	83	7.2	84
Reading Graphs & Tables	4.9	83	7.3	84
Knowledge & Use of Reference Materials	4.4	76	7.0	77
Math Concepts	4.8	84	7.5	90
Math Problem Solving	4.7	87	7.0	85

NORTH LAKE ELEMENTARY (Area 4)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	116	84	113	79
Quantitative	112	77	115	83
Nonverbal	110	73	114	81
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.5	75	6.8	76
Reading Comprehension	4.4	68	6.3	64
Spelling	4.8	74	6.7	69
Capitalization	4.9	77	6.9	71
Punctuation	4.8	75	6.9	72
Language Usage	4.7	70	7.0	72
Map Reading	4.6	78	6.7	75
Reading Graphs & Tables	4.6	76	6.9	78
Knowledge & Use of Reference Materials	4.2	69	6.6	70
Math Concepts	4.2	66	6.7	75
Math Problem Solving	4.0	62	6.4	72

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50
Cognitive Abilities Test (CAT)		
Verbal	107	67
Quantitative	108	69
Achievement	School Average Standard Age Score (S.S.)	S.S. Expressed as National Percentile
Norm	50	50
Tests of Academic Progress (TAP)		
Social Studies	53	58
Mechanics of English	52	55
Science	52	56
Reading	52	55
Mathematics	53	60
Literature	51	52

OAK VIEW ELEMENTARY (Area 2)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	110	73	105	62
Quantitative	107	67	102	55
Nonverbal	108	69	108	69
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.0	59	5.8	52
Reading Comprehension	4.1	60	5.7	50
Spelling	4.8	74	5.9	54
Capitalization	4.4	66	6.4	62
Punctuation	4.1	60	5.9	54
Language Usage	4.5	66	5.8	51
Map Reading	4.1	64	5.8	52
Reading Graphs & Tables	4.2	65	5.7	49
Knowledge & Use of Reference Materials	4.0	61	5.7	49
Math Concepts	4.0	59	5.9	54
Math Problem Solving	3.8	53	5.4	41

OAKLAND TERRACE ELEMENTARY (Area 1) Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	110	73	107	67
Quantitative	112	77	104	60
Nonverbal	108	69	108	69
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.1	62	5.8	52
Reading Comprehension	4.4	68	6.0	57
Spelling	4.5	68	5.9	54
Capitalization	4.1	59	5.8	52
Punctuation	4.3	65	5.8	51
Language Usage	4.3	62	6.0	55
Map Reading	4.4	73	5.7	49
Reading Graphs & Tables	4.5	74	5.9	55
Knowledge & Use of Reference Materials	4.3	72	5.7	49
Math Concepts	4.2	66	6.1	60
Math Problem Solving	4.2	70	5.5	44

249

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	111	75	110	73
Quantitative	112	77	109	71
Nonverbal	108	69	110	73
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.1	62	6.3	65
Reading Comprehension	4.2	63	6.1	60
Spelling	4.5	68	6.4	64
Capitalization	4.5	68	6.2	59
Punctuation	4.4	67	6.2	59
Language Usage	4.6	68	6.6	65
Map Reading	4.3	70	6.1	61
Reading Graphs & Tables	4.3	68	6.7	74
Knowledge & Use of Reference Materials	4.2	69	6.3	64
Math Concepts	4.1	63	6.4	67
Math Problem Solving	4.2	70	6.1	62

WILLIAM TYLER PAGE
ELEMENTARY (Area 4)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	114	81	108	69
Quantitative	115	83	109	71
Nonverbal	110	73	113	79
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.2	65	6.3	65
Reading Comprehension	4.4	68	6.3	64
Spelling	4.9	76	6.3	62
Capitalization	5.2	82	6.6	66
Punctuation	5.1	80	6.2	59
Language Usage	4.6	68	6.4	62
Map Reading	4.6	78	6.6	73
Reading Graphs & Tables	4.5	74	6.5	69
Knowledge & Use of Reference Materials	4.1	65	6.4	66
Math Concepts	4.2	66	6.7	75
Math Problem Solving	4.4	79	6.4	72

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50
Cognitive Abilities Test (CAT)		
Verbal	107	67
Quantitative	110	73
Achievement	School Average Standard Age Score (S.S.)	S.S. Expressed as National Percentile
Norm	50	50
Tests of Academic Progress (TAP)		
Social Studies	51	51
Mechanics of English	52	55
Science	53	61
Reading	52	55
Mathematics	53	60
Literature	52	55

PARKLAND JR. HS (Area 4)

Grade 7

Grade 9

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	105	62	104	60
Quantitative	107	67	110	73
Nonverbal	110	73	111	75
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	7.6	50	9.3	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	7.9	54	9.1	45
Reading Comprehension	7.7	50	8.9	44
Spelling	7.8	51	9.1	47
Capitalization	8.3	59	9.9	56
Punctuation	7.9	53	9.5	51
Language Usage	7.8	51	9.2	48
Map Reading	8.3	60	9.6	57
Reading Graphs & Tables	8.0	56	9.6	52
Knowledge & Use of Reference Materials	7.9	53	9.3	49
Math Concepts	8.2	60	9.7	51
Math Problem Solving	7.3	52	9.4	51

253

PARKWOOD ELEMENTARY (Area 1)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	110	73	111	75
Quantitative	110	73	112	77
Nonverbal	112	77	115	83
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.3	69	6.2	62
Reading Comprehension	4.3	66	6.3	64
Spelling	4.6	70	6.2	60
Capitalization	5.0	79	7.0	72
Punctuation	4.9	77	6.8	70
Language Usage	4.7	70	6.8	69
Map Reading	4.6	78	6.9	79
Reading Graphs & Tables	4.8	81	6.9	78
Knowledge & Use of Reference Materials	4.2	69	6.5	68
Math Concepts	4.0	59	6.7	75
Math Problem Solving	4.4	79	6.0	59

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50
Cognitive Abilities Test (CAT)		
Verbal	107	67
Quantitative	110	73
Achievement	School Average Standard Age Score (S.S.)	S.S. Expressed as National Percentile
Norm	50	50
Tests of Academic Progress (TAP)		
Social Studies	52	54
Mechanics of English	53	58
Science	54	64
Reading	52	55
Mathematics	54	64
Literature	52	55

255

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	112	77	112	77
Quantitative	110	73	109	71
Nonverbal	111	75	113	79
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.5	75	6.2	62
Reading Comprehension	4.4	68	6.1	60
Spelling	4.9	76	6.3	62
Capitalization	5.2	82	6.9	71
Punctuation	5.1	80	6.4	63
Language Usage	4.5	66	6.7	67
Map Reading	4.8	83	6.5	71
Reading Graphs & Tables	4.5	74	6.3	65
Knowledge & Use of Reference Materials	4.3	72	6.3	64
Math Concepts	4.2	66	6.0	57
Math Problem Solving	4.2	70	5.7	49

PINEY BRANCH ELEMENTARY (Area 2) Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal			102	55
Quantitative			102	55
Nonverbal			103	57
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary			5.3	40
Reading Comprehension			5.2	37
Spelling			5.5	45
Capitalization			5.4	44
Punctuation			5.3	41
Language Usage			5.5	46
Map Reading			5.4	41
Reading Graphs & Tables			5.7	49
Knowledge & Use of Reference Materials			5.5	44
Math Concepts			5.6	46
Math Problem Solving			5.4	41

PLEASANT VIEW ELEMENTARY (Area 1) Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	108	69	103	57
Quantitative	105	62	104	60
Nonverbal	110	73	105	62
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	3.8	52	5.2	38
Reading Comprehension	4.1	60	5.4	42
Spelling	4.6	70	5.7	50
Capitalization	4.3	64	6.1	57
Punctuation	4.1	60	5.7	49
Language Usage	4.5	66	5.6	48
Map Reading	3.8	53	5.8	52
Reading Graphs & Tables	4.3	68	6.1	60
Knowledge & Use of Reference Materials	4.1	65	6.0	57
Math Concepts	3.5	42	5.7	49
Math Problem Solving	3.4	39	5.7	49

POOLESVILLE ELEMENTARY (Area 5)
Grade 3
Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	109	71	107	67
Quantitative	110	73	104	60
Nonverbal	110	73	110	73
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.2	65	5.8	52
Reading Comprehension	4.2	63	6.0	57
Spelling	4.7	72	5.7	50
Capitalization	4.4	66	6.0	55
Punctuation	4.3	65	5.7	49
Language Usage	4.2	60	5.8	51
Map Reading	4.2	67	6.2	63
Reading Graphs & Tables	4.4	71	6.2	62
Knowledge & Use of Reference Materials	4.1	65	6.1	59
Math Concepts	3.9	56	5.9	54
Math Problem Solving	3.9	57	5.7	49

259

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	101	51	102	55
Quantitative	101	52	103	57
Nonverbal	107	67	107	67
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	7.6	50	9.3	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	7.3	41	8.7	37
Reading Comprehension	7.1	39	9.0	45
Spelling	7.0	39	8.4	38
Capitalization	7.0	40	8.3	34
Punctuation	7.2	42	8.1	33
Language Usage	7.0	40	8.4	38
Map Reading	7.5	46	9.2	50
Reading Graphs & Tables	7.5	45	8.9	40
Knowledge & Use of Reference Materials	7.3	42	8.9	41
Math Concepts	7.3	41	8.9	39
Math Problem Solving	7.2	40	8.6	37

Scholastic Aptitude P	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50
Cognitive Abilities Test (CAT)		
Verbal	101	52
Quantitative	100	50
Achievement	School Average Standard Age Score (S.S.)	S.S. Expressed as National Percentile
Norm	50	100
Tests of Academic Progress (TAP)		
Social Studies	47	34
Mechanics of English	46	32
Science	49	46
Reading	47	35
Mathematics	47	39
Literature	49	42

Definitions of the school average scores reported above:

Standard Score for CAT – This score is scaled so that the average of the national norm for students of any age is 100.

Standard Score for TAP – This score is scaled so that the average of the national norm sample is 50. About 2/3 of the students taking the test would be expected to score between 40 and 60.

261

POTOMAC ELEMENTARY (Area 3)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	120	89	117	86
Quantitative	121	91	115	83
Nonverbal	117	86	115	83
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	5.5	94	6.9	78
Reading Comprehension	5.3	88	6.7	73
Spelling	5.4	84	7.1	76
Capitalization	6.0	94	7.2	75
Punctuation	6.0	92	7.0	73
Language Usage	5.7	88	7.3	77
Map Reading	5.8	95	7.0	81
Reading Graphs & Tables	5.7	93	7.1	81
Knowledge & Use of Reference Materials	5.1	90	7.0	77
Math Concepts	5.2	92	6.8	77
Math Problem Solving	4.9	91	6.4	72

262

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	114	81	115	83
Quantitative	119	88	121	91
Nonverbal	116	84	120	89
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	7.6	50	9.3	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	8.8	73	10.6	75
Reading Comprehension	8.7	70	10.2	66
Spelling	8.7	66	10.2	63
Capitalization	9.1	70	10.8	67
Punctuation	8.9	69	10.5	66
Language Usage	9.0	69	10.8	69
Map Reading	9.2	78	10.6	75
Reading Graphs & Tables	8.9	74	10.7	70
Knowledge & Use of Reference Materials	8.8	70	10.4	68
Math Concepts	9.2	78	10.8	69
Math Problem Solving	8.6	72	10.2	67

RADNOR ELEMENTARY (Area 1)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	112	77	120	89
Quantitative	122	92	119	88
Nonverbal	114	81	118	87
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.6	78	6.9	78
Reading Comprehension	4.4	68	6.8	76
Spelling	4.7	72	7.2	77
Capitalization	5.3	84	7.2	75
Punctuation	5.3	83	7.1	75
Language Usage	5.1	78	7.3	77
Map Reading	4.7	81	7.0	81
Reading Graphs & Tables	4.6	76	7.2	83
Knowledge & Use of Reference Materials	4.4	76	7.2	81
Math Concepts	4.4	73	6.9	79
Math Problem Solving	4.5	82	6.5	75

RANDOLPH JR. HS (Area 4)

Grade 7

Grade 9

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	101	52	103	57
Quantitative	102	55	107	67
Nonverbal	106	65	110	73
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	7.6	50	9.3	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	8.0	56	11.0	82
Reading Comprehension	6.8	34	8.7	40
Spelling	7.5	47	9.0	45
Capitalization	7.7	50	9.4	49
Punctuation	7.8	51	9.1	45
Language Usage	7.3	44	9.0	45
Map Reading	7.8	51	9.1	49
Reading Graphs & Tables	7.5	45	9.2	45
Knowledge & Use of Reference Materials	7.5	46	9.0	43
Math Concepts	7.5	45	9.1	43
Math Problem Solving	7.1	38	8.8	40

265

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	109	71	105	62
Quantitative	109	71	109	71
Nonverbal	112	77	110	73
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	7.6	50	9.3	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	8.2	60	9.5	52
Reading Comprehension	8.0	56	9.5	53
Spelling	8.2	58	9.1	47
Capitalization	8.4	60	9.5	50
Punctuation	8.3	59	9.2	46
Language Usage	8.2	57	9.4	50
Map Reading	8.5	64	9.9	63
Reading Graphs & Tables	8.1	58	9.7	54
Knowledge & Use of Reference Materials	8.3	61	9.5	53
Math Concepts	8.4	64	9.7	51
Math Problem Solving	7.9	54	9.3	50

RIDGEVIEW JR. HS (Area 5)

Grade 7

Grade 9

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	103	57	103	57
Quantitative	104	60	103	57
Nonverbal	108	69	109	71
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	7.6	50	9.3	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	7.6	47	9.1	45
Reading Comprehension	7.4	45	9.0	45
Spelling	7.4	45	8.8	43
Capitalization	7.7	50	9.3	47
Punctuation	7.6	48	9.2	46
Language Usage	7.6	48	9.2	48
Map Reading	7.6	48	9.0	47
Reading Graphs & Tables	7.7	49	9.0	42
Knowledge & Use of Reference Materials	7.6	47	8.9	41
Math Concepts	7.9	53	9.0	41
Math Problem Solving	7.5	45	8.6	37

RITCHIE PARK ELEMENTARY (Area 3)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	117	86	113	79
Quantitative	118	87	113	79
Nonverbal	115	83	118	87
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.6	78	6.5	70
Reading Comprehension	4.6	74	6.6	71
Spelling	5.0	78	6.8	71
Capitalization	4.8	75	7.1	74
Punctuation	5.0	78	6.8	70
Language Usage	4.6	68	6.7	67
Map Reading	4.6	78	6.8	77
Reading Graphs & Tables	4.8	81	6.8	76
Knowledge & Use of Reference Materials	4.4	76	6.6	70
Math Concepts	4.3	69	6.7	75
Math Problem Solving	4.6	85	6.4	72

ROCK CREEK FOREST ELEM. (Area 1) Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	111	75		
Quantitative	113	79		
Nonverbal	114	81		
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.0	59		
Reading Comprehension	3.9	55		
Spelling	4.6	70		
Capitalization	4.8	75		
Punctuation	4.9	77		
Language Usage	4.7	70		
Map Reading	4.4	73		
Reading Graphs & Tables	4.6	76		
Knowledge & Use of Reference Materials	4.2	69		
Math Concepts	4.3	69		
Math Problem Solving	4.2	70		

289

ROCK CREEK PALISADES ELEM (Area 1)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	114	81	111	75
Quantitative	118	87	112	77
Nonverbal	116	84	115	83
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.3	69	6.1	60
Reading Comprehension	4.5	71	6.2	62
Spelling	4.7	72	6.2	60
Capitalization	5.4	85	6.7	67
Punctuation	4.8	75	6.3	61
Language Usage	4.8	72	6.1	57
Map Reading	4.6	78	6.3	66
Reading Graphs & Tables	4.8	81	6.2	62
Knowledge & Use of Reference Materials	4.4	76	6.5	68
Math Concepts	4.6	79	6.3	65
Math Problem Solving	4.5	82	6.1	62

ROCK CREEK VALLEY ELEMENTARY (Area 4) Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	116	84	111	75
Quantitative	121	91	113	79
Nonverbal	115	83	115	83
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.6	78	6.2	62
Reading Comprehension	4.6	74	6.2	62
Spelling	5.3	83	6.3	62
Capitalization	5.3	84	6.8	69
Punctuation	5.5	86	6.6	67
Language Usage	5.0	76	6.5	63
Map Reading	4.6	78	6.6	73
Reading Graphs & Tables	4.9	83	6.6	72
Knowledge & Use of Reference Materials	4.6	81	6.6	70
Math Concepts	4.5	76	6.7	75
Math Problem Solving	4.6	85	6.5	75

271

ROCKING HORSE ROAD ELEMENTARY
(Area 4)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	106	65	106	65
Quantitative	111	75	108	69
Nonverbal	109	71	111	75
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	3.9	55	5.9	54
Reading Comprehension	3.9	55	5.9	55
Spelling	4.3	64	6.2	60
Capitalization	4.6	71	6.8	69
Punctuation	4.6	71	6.5	65
Language Usage	4.1	58	6.2	58
Map Reading	3.9	56	6.5	71
Reading Graphs & Tables	4.3	68	6.5	69
Knowledge & Use of Reference Materials	3.9	57	6.4	66
Math Concepts	3.9	56	6.3	65
Math Problem Solving	4.0	62	6.1	62

ROCKVILLE H.S. (Area 3)

Grade 7

Grade 9

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal			107	67
Quantitative			109	71
Nonverbal			112	77
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	7.6	50	9.3	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary			9.4	50
Reading Comprehension			9.2	48
Spelling			9.2	48
Capitalization			9.3	47
Punctuation			9.6	53
Language Usage			9.5	52
Map Reading			9.5	56
Reading Graphs & Tables			9.3	47
Knowledge & Use of Reference Materials			9.5	53
Math Concepts			9.6	50
Math Problem Solving			9.2	48

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50
Cognitive Abilities Test (CAT)		
Verbal	105	62
Quantitative	107	67
Achievement	School Average Standard Age Score (S.S.)	S.S. Expressed as National Percentile
Norm	50	50
Tests of Academic Progress (TAP)		
Social Studies	50	46
Mechanics of English	51	51
Science	52	56
Reading	50	47
Mathematics	53	60
Literature	51	50

ROLLING TERRACE ELEMENTARY (Area 2) Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	108	69		
Quantitative	113	79		
Nonverbal	107	67		
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.0	59		
Reading Comprehension	4.1	60		
Spelling	4.6	70		
Capitalization	4.6	71		
Punctuation	5.1	80		
Language Usage	4.5	66		
Map Reading	4.1	64		
Reading Graphs & Tables	4.4	71		
Knowledge & Use of Reference Materials	4.1	65		
Math Concepts	4.0	59		
Math Problem Solving	4.0	62		

275

ROLLINGWOOD ELEMENTARY (Area 1)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	119	88	115	83
Quantitative	117	86	114	81
Nonverbal	114	81	116	84
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.6	78	6.5	70
Reading Comprehension	4.9	81	6.5	69
Spelling	5.1	79	6.8	71
Capitalization	5.2	82	7.4	78
Punctuation	5.3	83	7.2	77
Language Usage	5.1	78	6.7	67
Map Reading	4.9	84	6.7	75
Reading Graphs & Tables	5.0	84	6.7	74
Knowledge & Use of Reference Materials	4.9	87	6.7	71
Math Concepts	4.9	87	6.9	79
Math Problem Solving	5.0	92	6.3	69

ROSEMONT ELEMENTARY (Area 5)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	110	73	110	73
Quantitative	116	84	110	73
Nonverbal	110	73	114	81
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.1	62	6.7	74
Reading Comprehension	4.1	60	6.3	64
Spelling	4.9	76	6.7	69
Capitalization	5.0	79	8.0	87
Punctuation	4.8	75	7.3	78
Language Usage	4.6	68	6.7	67
Map Reading	4.5	76	6.6	73
Reading Graphs & Tables	4.4	71	6.7	74
Knowledge & Use of Reference Materials	4.4	76	6.7	71
Math Concepts	4.0	59	7.0	81
Math Problem Solving	4.2	70	6.4	72

SADDLEBROOK ELEMENTARY (Area 2) Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	115	83	116	84
Quantitative	115	83	116	84
Nonverbal	113	79	115	83
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.5	75	6.8	76
Reading Comprehension	4.4	68	6.6	71
Spelling	4.8	74	7.0	74
Capitalization	5.0	79	7.0	72
Punctuation	5.1	80	6.8	70
Language Usage	4.8	72	7.1	74
Map Reading	4.7	81	7.1	83
Reading Graphs & Tables	4.6	76	7.3	84
Knowledge & Use of Reference Materials	4.4	76	6.8	73
Math Concepts	4.3	69	6.8	77
Math Problem Solving	4.3	75	6.5	75

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50
Cognitive Abilities Test (CAT)		
Verbal	108	69
Quantitative	109	71
Achievement	School Average Standard Age Score (S.S.)	S.S. Expressed as National Percentile
Norm	50	50
Tests of Academic Progress (TAP)		
Social Studies	52	54
Mechanics of English	52	55
Science	53	61
Reading	52	55
Mathematics	53	60
Literature	52	55

279

SEVEN LOCKS ELEMENTARY (Area 3)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	119	88	116	84
Quantitative	123	92	116	84
Nonverbal	115	83	114	81
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.7	80	6.7	74
Reading Comprehension	4.8	78	6.6	71
Spelling	5.2	81	6.9	72
Capitalization	5.6	88	7.0	72
Punctuation	5.6	87	7.1	75
Language Usage	5.3	81	7.3	77
Map Reading	4.7	81	7.0	81
Reading Graphs & Tables	5.0	84	7.5	87
Knowledge & Use of Reference Materials	4.7	83	6.9	75
Math Concepts	4.9	87	7.2	85
Math Problem Solving	4.8	89	6.6	77

SHERWOOD ELEMENTARY (Area 4)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	107	67	106	65
Quantitative	110	73	107	67
Nonverbal	107	67	107	67
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.1	62	5.7	49
Reading Comprehension	4.0	57	5.8	52
Spelling	4.5	68	6.0	56
Capitalization	4.8	75	6.4	62
Punctuation	4.8	75	6.1	58
Language Usage	4.1	58	6.0	55
Map Reading	4.3	70	5.9	55
Reading Graphs & Tables	4.4	71	6.0	57
Knowledge & Use of Reference Materials	4.2	69	6.0	57
Math Concepts	4.2	66	6.1	60
Math Problem Solving	4.0	62	5.7	49

281

SHERWOOD H. S. (Area 4)

Grade 7

Grade 9

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal			107	67
Quantitative			107	67
Nonverbal			109	71
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	7.6	50	9.3	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary			9.3	49
Reading Comprehension			9.2	48
Spelling			8.9	44
Capitalization			9.0	43
Punctuation			8.8	41
Language Usage			9.0	45
Map Reading			9.2	50
Reading Graphs & Tables			9.5	50
Knowledge & Use of Reference Materials			9.3	49
Math Concepts			9.3	45
Math Problem Solving			9.0	44

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50
Cognitive Abilities Test (CAT)		
Verbal	104	60
Quantitative	105	62
Achievement	School Average Standard Age Score (S.S.)	S.S. Expressed as National Percentile
Norm	50	50
Tests of Academic Progress (TAP)		
Social Studies	49	43
Mechanics of English	49	43
Science	49	46
Reading	51	50
Mathematics	51	53
Literature	50	46

283

Sligo Jr. HS (Area 2)

Grade 7

Grade 9

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	104	60	106	65
Quantitative	105	62	109	71
Nonverbal	108	69	112	77
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	7.6	50	9.3	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	7.5	45	9.2	47
Reading Comprehension	7.4	45	9.1	47
Spelling	7.4	45	9.2	48
Capitalization	7.8	51	9.3	47
Punctuation	7.6	48	9.2	46
Language Usage	7.5	47	9.1	47
Map Reading	7.7	50	9.5	56
Reading Graphs & Tables	7.6	47	9.4	48
Knowledge & Use of Reference Materials	7.7	49	9.3	49
Math Concepts	7.9	53	9.6	50
Math Problem Solving	7.5	45	9.1	46

SOMERSET ELEMENTARY (Area 1)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	114	81	116	84
Quantitative	116	84	118	87
Nonverbal	115	83	117	86
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	5.0	86	6.8	76
Reading Comprehension	5.0	83	6.7	73
Spelling	5.1	79	6.8	71
Capitalization	4.9	77	7.2	75
Punctuation	5.4	84	7.0	73
Language Usage	5.1	78	7.0	72
Map Reading	5.2	89	7.2	84
Reading Graphs & Tables	5.1	86	7.3	84
Knowledge & Use of Reference Materials	4.7	83	7.0	77
Math Concepts	5.2	92	7.0	75
Math Problem Solving	5.0	92	6.7	85

285

SOUTH LAKE ELEMENTARY (Area 5)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	113	79	111	75
Quantitative	115	83	106	65
Nonverbal	111	75	110	73
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.4	72	6.1	60
Reading Comprehension	4.4	68	6.2	62
Spelling	5.0	78	6.2	60
Capitalization	4.9	77	5.8	52
Punctuation	5.1	80	6.0	56
Language Usage	4.7	70	6.3	60
Map Reading	4.5	76	6.1	61
Reading Graphs & Tables	4.7	79	6.3	65
Knowledge & Use of Reference Materials	4.3	72	6.3	64
Math Concepts	4.3	69	5.9	54
Math Problem Solving	4.4	79	5.8	52

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50
Cognitive Abilities Test (CAT)		
Verbal	111	75
Quantitative	113	79
Achievement	School Average Standard Age Score (S.S.)	S.S. Expressed as National Percentile
Norm	50	50
Tests of Academic Progress (TAP)		
Social Studies	53	58
Mechanics of English	55	65
Science	55	69
Reading	54	64
Mathematics	56	71
Literature	54	61

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	115	83	119	88
Quantitative	114	81	119	88
Nonverbal	111	75	118	87
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.5	75	6.8	76
Reading Comprehension	4.5	71	6.8	76
Spelling	4.8	74	7.1	76
Capitalization	4.7	73	7.3	77
Punctuation	4.8	75	7.0	73
Language Usage	4.6	68	7.2	76
Map Reading	4.4	73	6.9	79
Reading Graphs & Tables	4.4	71	7.3	84
Knowledge & Use of Reference Materials	4.2	69	6.8	73
Math Concepts	4.3	69	7.2	85
Math Problem Solving	4.3	75	6.7	79

STONEGATE ELEMENTARY (Area 4)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	117	86	111	75
Quantitative	120	89	107	67
Nonverbal	115	83	110	73
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.4	72	6.0	57
Reading Comprehension	4.5	71	5.9	55
Spelling	4.8	74	6.1	58
Capitalization	5.0	79	6.5	64
Punctuation	4.5	69	5.8	51
Language Usage	4.8	72	6.4	62
Map Reading	4.4	73	6.0	58
Reading Graphs & Tables	4.4	71	6.3	65
Knowledge & Use of Reference Materials	4.1	65	6.2	61
Math Concepts	4.3	69	6.2	62
Math Problem Solving	4.4	79	6.0	59

289

STRATHMORE ELEMENTARY (Area 2)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	104	60	112	77
Quantitative	110	73	114	81
Nonverbal	105	62	114	81
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	3.8	52	5.9	54
Reading Comprehension	3.7	49	6.1	60
Spelling	4.4	66	6.3	62
Capitalization	4.2	62	6.4	62
Punctuation	3.9	54	6.0	56
Language Usage	4.0	56	6.1	57
Map Reading	3.8	53	6.1	61
Reading Graphs & Tables	4.0	58	6.6	72
Knowledge & Use of Reference Materials	3.8	53	6.2	61
Math Concepts	3.9	56	6.4	67
Math Problem Solving	3.7	49	6.2	65

SUMMIT HALL ELEMENTARY (Area 5)
Grade 3
Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	110	73	108	69
Quantitative	114	81	106	65
Nonverbal	113	79	110	73
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.3	69	5.8	52
Reading Comprehension	4.2	63	5.7	50
Spelling	4.8	74	5.9	54
Capitalization	5.0	79	6.3	61
Punctuation	5.0	78	6.0	56
Language Usage	4.5	66	6.4	62
Map Reading	4.3	70	6.0	58
Reading Graphs & Tables	4.4	71	6.1	60
Knowledge & Use of Reference Materials	4.0	61	6.3	64
Math Concepts	4.4	73	6.1	60
Math Problem Solving	4.3	75	5.7	49

TAKOMA PARK ELEMENTARY (Area 2) Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	98	45		
Quantitative	99	48		
Nonverbal	99	48		
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	3.5	44		
Reading Comprehension	3.8	52		
Spelling	3.9	55		
Capitalization	3.5	44		
Punctuation	3.3	38		
Language Usage	3.6	47		
Map Reading	3.4	39		
Reading Graphs & Tables	3.7	49		
Knowledge & Use of Reference Materials	3.5	43		
Math Concepts	3.5	42		
Math Problem Solving	3.6	46		

TAKOMA PARK JUNIOR HS (Area 2)

Grade 7

Grade 9

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	98	45	96	40
Quantitative	98	45	99	48
Nonverbal	104	60	104	60
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	7.6	50	9.3	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	6.9	34	8.2	29
Reading Comprehension	6.6	30	7.9	28
Spelling	6.9	38	8.4	38
Capitalization	7.4	45	8.8	40
Punctuation	7.0	39	8.4	36
Language Usage	7.0	40	8.4	38
Map Reading	6.6	30	8.0	31
Reading Graphs & Tables	6.8	33	8.3	32
Knowledge & Use of Reference Materials	7.0	37	8.1	30
Math Concepts	6.8	31	8.1	28
Math Problem Solving	6.7	31	7.9	27

293

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	98	45	99	48
Quantitative	99	48	96	40
Nonverbal	95	38	100	50
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	3.4	41	5.1	35
Reading Comprehension	3.2	35	5.2	37
Spelling	3.8	52	5.6	35
Capitalization	3.4	42	5.4	44
Punctuation	3.1	32	4.9	33
Language Usage	3.2	38	4.8	33
Map Reading	3.3	36	5.5	44
Reading Graphs & Tables	3.4	40	4.8	29
Knowledge & Use of Reference Materials	3.1	29	5.2	36
Math Concepts	3.3	34	5.2	36
Math Problem Solving	3.1	30	4.7	25

TILDEN JR. HS (Area 3)

Grade 7

Grade 9

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	113	79	115	83
Quantitative	119	88	121	91
Nonverbal	115	83	119	88
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	7.6	50	9.3	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	3.8	73	10.5	73
Reading Comprehension	8.5	65	10.2	66
Spelling	8.9	70	10.2	63
Capitalization	9.9	80	11.3	74
Punctuation	9.4	76	11.2	77
Language Usage	9.4	75	10.8	69
Map Reading	9.1	76	10.6	75
Reading Graphs & Tables	9.0	75	10.7	70
Knowledge & Use of Reference Materials	8.9	72	10.6	71
Math Concepts	9.0	75	10.7	68
Math Problem Solving	8.6	72	10.2	67

295

TRAVILAH ELEMENTARY (Area 3)
Grade 3
Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	113	79	107	67
Quantitative	114	81	103	57
Nonverbal	113	79	109	71
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.3	69	6.0	57
Reading Comprehension	4.4	68	5.8	52
Spelling	4.8	74	6.2	60
Capitalization	5.1	81	6.4	62
Punctuation	4.8	75	6.1	58
Language Usage	4.7	70	6.0	55
Map Reading	4.4	73	5.7	49
Reading Graphs & Tables	4.3	68	6.0	57
Knowledge & Use of Reference Materials	4.2	69	6.2	61
Math Concepts	4.2	66	5.8	52
Math Problem Solving	4.2	70	5.9	55

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	103	57	104	60
Quantitative	106	65	106	65
Nonverbal	106	65	108	69
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	3.6	47	5.4	42
Reading Comprehension	3.6	47	5.6	47
Spelling	4.1	59	5.6	48
Capitalization	3.9	55	5.4	44
Punctuation	4.0	57	5.5	45
Language Usage	3.9	54	5.8	51
Map Reading	3.7	49	5.7	49
Reading Graphs & Tables	3.7	49	6.0	57
Knowledge & Use of Reference Materials	3.6	46	5.6	47
Math Concepts	3.9	56	5.8	52
Math Problem Solving	3.7	49	5.6	47

VIERS MILL ELEMENTARY (Area 4)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	102	55	101	52
Quantitative	105	62	102	55
Nonverbal	106	65	104	60
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	3.7	49	5.2	38
Reading Comprehension	3.8	52	5.6	47
Spelling	4.3	64	5.7	50
Capitalization	4.3	64	6.7	67
Punctuation	4.5	69	6.4	63
Language Usage	4.0	56	5.7	50
Map Reading	3.7	49	6.1	61
Reading Graphs & Tables	3.8	52	6.2	62
Knowledge & Use of Reference Materials	3.7	49	5.8	52
Math Concepts	3.8	52	5.7	49
Math Problem Solving	3.8	53	5.7	49

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	106	65	108	69
Quantitative	110	73	106	65
Nonverbal	107	67	112	77
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	3.9	55	5.8	52
Reading Comprehension	4.1	60	5.7	50
Spelling	4.5	68	6.2	60
Capitalization	4.8	75	6.1	57
Punctuation	4.6	71	5.6	47
Language Usage	4.5	66	5.9	53
Map Reading	4.0	60	5.9	55
Reading Graphs & Tables	4.2	65	5.8	52
Knowledge & Use of Reference Materials	3.8	53	5.8	52
Math Concepts	3.8	52	5.8	52
Math Problem Solving	4.0	62	5.8	52

WATKINS MILL ELEMENTARY (Area 5)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	108	69	108	69
Quantitative	110	73	108	69
Nonverbal	107	67	109	71
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.0	59	6.3	65
Reading Comprehension	4.0	57	6.2	62
Spelling	4.4	66	6.4	64
Capitalization	4.3	64	6.2	59
Punctuation	4.2	62	5.6	47
Language Usage	3.9	54	6.2	58
Map Reading	4.1	64	6.0	58
Reading Graphs & Tables	4.3	68	6.2	62
Knowledge & Use of Reference Materials	4.0	61	6.2	61
Math Concepts	4.0	59	6.5	70
Math Problem Solving	4.0	62	6.0	59

WAYSIDE ELEMENTARY (Area 3)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	116	84	115	83
Quantitative	122	92	115	83
Nonverbal	113	79	114	81
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.6	78	6.6	72
Reading Comprehension	4.5	71	6.5	69
Spelling	5.0	78	7.0	74
Capitalization	4.9	77	7.1	74
Punctuation	5.1	80	6.7	68
Language Usage	4.8	72	6.9	71
Map Reading	4.4	73	6.9	79
Reading Graphs & Tables	4.8	81	6.9	78
Knowledge & Use of Reference Materials	4.5	79	6.9	75
Math Concepts	4.7	82	7.1	83
Math Problem Solving	4.4	79	6.8	81

WELLER ROAD ELEMENTARY (Area 4)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	106	65	105	62
Quantitative	107	67	108	69
Nonverbal	104	60	109	71
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	3.9	55	5.6	47
Reading Comprehension	3.8	52	5.5	44
Spelling	4.0	57	5.6	48
Capitalization	4.3	64	5.7	50
Punctuation	4.1	60	5.4	43
Language Usage	4.0	56	5.7	50
Map Reading	3.9	56	5.7	49
Reading Graphs & Tables	4.0	58	5.7	49
Knowledge & Use of Reference Materials	3.8	53	5.9	54
Math Concepts	3.8	52	5.9	54
Math Problem Solving	3.7	49	5.7	49

JULIUS WEST MIDDLE SCHOOL (Area 3)
Grade 7
Grade 9

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	107	67	106	65
Quantitative	107	67	109	71
Nonverbal	111	75	115	83
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	7.6	50	9.3	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	7.9	54	9.6	55
Reading Comprehension	7.9	54	9.4	51
Spelling	7.8	51	9.2	48
Capitalization	8.1	56	10.0	57
Punctuation	8.2	58	9.8	56
Language Usage	8.1	55	9.6	53
Map Reading	8.3	60	9.8	61
Reading Graphs & Tables	7.9	53	9.7	54
Knowledge & Use of Reference Materials	8.0	56	9.5	53
Math Concepts	8.2	60	9.9	55
Math Problem Solving	7.8	52	9.3	50

WEST ROCKVILLE ELEMENTARY (Area 3) Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	107	67	106	65
Quantitative	111	75	110	73
Nonverbal	109	71	111	75
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.1	62	5.5	44
Reading Comprehension	4.4	68	5.9	55
Spelling	4.5	68	5.9	54
Capitalization	4.8	75	6.2	59
Punctuation	4.4	67	5.8	51
Language Usage	4.5	66	6.0	55
Map Reading	4.4	73	6.0	58
Reading Graphs & Tables	4.4	71	6.0	57
Knowledge & Use of Reference Materials	4.3	72	5.8	52
Math Concepts	4.1	63	6.2	62
Math Problem Solving	4.1	66	5.9	55

WESTBROOK ELEMENTARY (Area 1)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	119	88	120	89
Quantitative	117	86	118	87
Nonverbal	113	79	118	87
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.8	82	6.7	74
Reading Comprehension	4.8	78	6.7	73
Spelling	4.9	76	6.6	67
Capitalization	4.9	77	7.2	75
Punctuation	5.2	81	6.8	70
Language Usage	4.9	74	7.3	77
Map Reading	4.6	78	7.1	83
Reading Graphs & Tables	4.6	76	7.2	83
Knowledge & Use of Reference Materials	4.5	79	6.7	71
Math Concepts	4.5	76	6.9	79
Math Problem Solving	4.3	75	6.6	77

WESTERN JR. HS (Area 1)

Grade 7

Grade 9

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	114	81	115	83
Quantitative	114	81	114	81
Nonverbal	115	83	117	86
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	7.6	50	9.3	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	8.8	73	10.5	73
Reading Comprehension	8.5	65	10.1	64
Spelling	8.6	64	10.3	65
Capitalization	9.4	73	10.8	67
Punctuation	9.1	72	10.6	68
Language Usage	9.4	75	10.8	69
Map Reading	8.8	70	10.3	70
Reading Graphs & Tables	8.9	74	10.3	64
Knowledge & Use of Reference Materials	8.7	69	10.3	67
Math Concepts	9.0	75	10.3	61
Math Problem Solving	8.6	72	9.8	59

WESTOVER ELEMENTARY (Area 2)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	112	77	112	77
Quantitative	118	87	110	73
Nonverbal	111	75	111	75
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.4	72	6.2	62
Reading Comprehension	4.5	71	6.3	64
Spelling	4.8	74	6.4	64
Capitalization	5.5	87	6.5	64
Punctuation	5.4	84	6.3	61
Language Usage	5.0	76	6.4	62
Map Reading	4.7	81	6.4	68
Reading Graphs & Tables	4.8	81	6.6	72
Knowledge & Use of Reference Materials	4.7	83	6.5	68
Math Concepts	4.5	76	6.7	75
Math Problem Solving	4.7	87	6.1	62

307

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50
Cognitive Abilities Test (CAT)		
Verbal	103	57
Quantitative	106	65
Achievement	School Average Standard Age Score (S.S.)	S.S. Expressed as National Percentile
Norm	50	50
Tests of Academic Progress (TAP)		
Social Studies	49	43
Mechanics of English	49	43
Science	51	52
Reading	49	43
Mathematics	51	53
Literature	49	42

WHEATON WOODS ELEMENTARY (Area 4)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	110	73	105	62
Quantitative	114	81	107	67
Nonverbal	111	75	109	71
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.2	65	5.6	47
Reading Comprehension	4.2	63	5.6	47
Spelling	4.5	68	6.0	56
Capitalization	4.5	68	6.3	61
Punctuation	4.5	69	5.9	54
Language Usage	4.2	60	5.8	51
Map Reading	4.2	67	6.0	58
Reading Graphs & Tables	4.4	71	6.0	57
Knowledge & Use of Reference Materials	4.1	65	6.0	57
Math Concepts	4.2	66	6.1	60
Math Problem Solving	4.2	70	5.8	52

WHETSTONE ELEMENTARY (Area 5)

Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	118	87	110	73
Quantitative	121	91	111	75
Nonverbal	116	84	114	81
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.7	80	6.1	60
Reading Comprehension	4.9	81	6.1	60
Spelling	5.2	91	6.4	64
Capitalization	5.5	87	6.4	62
Punctuation	5.4	84	6.1	58
Language Usage	5.0	76	6.5	63
Map Reading	4.8	83	6.5	71
Reading Graphs & Tables	5.1	86	6.7	74
Knowledge & Use of Reference Materials	4.8	85	6.3	64
Math Concepts	4.6	79	6.4	67
Math Problem Solving	4.8	89	6.2	65

310

WHITE OAK JR. HS (Area 2)

Grade 7

Grade 9

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	108	69	111	75
Quantitative	109	71	113	79
Nonverbal	110	73	113	79
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	7.6	50	9.3	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	8.1	58	10.0	63
Reading Comprehension	8.0	56	9.9	60
Spelling	7.9	53	9.8	57
Capitalization	8.4	60	10.4	62
Punctuation	8.3	59	9.9	58
Language Usage	8.3	58	10.0	58
Map Reading	8.3	60	10.4	71
Reading Graphs & Tables	8.3	62	10.3	64
Knowledge & Use of Reference Materials	8.3	61	10.0	61
Math Concepts	8.3	62	10.2	59
Math Problem Solving	7.8	52	9.7	57

311

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50
Cognitive Abilities Test (CAT)		
Verbal	117	86
Quantitative	118	87
Achievement	School Average Standard Age Score (S.S.)	S.S. Expressed as National Percentile
Norm	50	50
Tests of Academic Progress (TAP)		
Social Studies	58	73
Mechanics of English	58	75
Science	57	74
Reading	57	73
Mathematics	60	83
Literature	58	73

WOOD ACRES ELEMENTARY (Area 1) Grade 3

Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	118	87	119	88
Quantitative	119	88	115	83
Nonverbal	112	77	118	87
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.7	80	7.0	80
Reading Comprehension	4.9	81	7.1	81
Spelling	5.0	78	7.1	76
Capitalization	4.9	77	7.1	74
Punctuation	4.9	77	7.1	75
Language Usage	5.0	76	7.4	79
Map Reading	4.5	76	7.1	83
Reading Graphs & Tables	4.8	81	7.3	84
Knowledge & Use of Reference Materials	4.5	79	7.1	79
Math Concepts	4.5	76	7.0	81
Math Problem Solving	4.4	79	6.5	75

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	112	77	110	73
Quantitative	116	84	118	87
Nonverbal	115	83	118	87
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	7.6	50	9.3	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	8.5	67	10.2	67
Reading Comprehension	8.3	61	10.1	64
Spelling	8.5	63	10.0	60
Capitalization	9.1	70	10.6	64
Punctuation	9.1	72	10.4	65
Language Usage	8.8	66	10.2	61
Map Reading	9.1	76	10.6	75
Reading Graphs & Tables	8.8	72	10.3	64
Knowledge & Use of Reference Materials	8.7	69	10.2	65
Math Concepts	9.1	76	10.6	66
Math Problem Solving	8.6	72	10.2	67

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	113	79	115	83
Quantitative	117	86	118	87
Nonverbal	114	81	116	84
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.7	80	6.7	74
Reading Comprehension	4.6	74	6.9	78
Spelling	5.2	81	7.4	80
Capitalization	5.3	84	8.3	91
Punctuation	5.2	81	7.9	87
Language Usage	5.1	78	7.8	85
Map Reading	4.7	81	7.0	81
Reading Graphs & Tables	5.1	86	7.4	85
Knowledge & Use of Reference Materials	4.8	85	7.3	83
Math Concepts	4.5	76	6.9	79
Math Problem Solving	4.5	82	6.9	83

315

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	102	55	105	62
Quantitative	105	62	104	60
Nonverbal	103	57	105	62
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	3.6	47	5.6	47
Reading Comprehension	3.7	49	5.5	44
Spelling	4.2	62	5.6	48
Capitalization	4.2	62	5.4	44
Punctuation	4.4	67	5.5	45
Language Usage	3.9	54	5.9	53
Map Reading	3.6	46	5.6	47
Reading Graphs & Tables	3.9	55	5.8	52
Knowledge & Use of Reference Materials	3.6	46	5.8	52
Math Concepts	3.7	49	5.7	49
Math Problem Solving	3.7	49	5.4	41

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50
Cognitive Abilities Test (CAT)		
Verbal	113	79
Quantitative	115	83
Achievement	School Average Standard Age Score (S.S.)	S.S. Expressed as National Percentile
Norm	50	50
Tests of Academic Progress (TAP)		
Social Studies	56	67
Mechanics of English	58	75
Science	57	74
Reading	55	67
Mathematics	58	78
Literature	56	68

317

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal			112	77
Quantitative			116	84
Nonverbal			116	84
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	7.6	50	9.3	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary			10.1	65
Reading Comprehension			9.9	60
Spelling			9.9	58
Capitalization			10.5	63
Punctuation			10.3	64
Language Usage			10.2	61
Map Reading			10.1	66
Reading Graphs & Tables			10.2	62
Knowledge & Use of Reference Materials			10.0	61
Math Concepts			10.5	64
Math Problem Solving			10.0	63

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50
Cognitive Abilities Test (CAT)		
Verbal	113	79
Quantitative	114	81
Achievement	School Average Standard Age Score (S.S.)	S.S. Expressed as National Percentile
Norm	50	50
Tests of Academic Progress (TAP)		
Social Studies	55	64
Mechanics of English	55	65
Science	56	72
Reading	55	67
Mathematics	58	78
Literature	55	65

WYNGATE ELEMENTARY (Area 1)
Grade 3
Grade 5

Scholastic Aptitude	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile	School Average Standard Age Score (S.A.S.)	S.A.S. Expressed as National Percentile
Norm	100	50	100	50
Cognitive Abilities Test (CAT)				
Verbal	121	91	123	92
Quantitative	122	92	125	94
Nonverbal	116	84	122	92
Achievement	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile	School Average Grade Equivalent Score (G.E.)	G.E. Expressed as a National Percentile
Norm	3.7	50	5.7	50
Iowa Tests of Basic Skills (ITBS)				
Vocabulary	4.8	82	7.2	84
Reading Comprehension	5.1	84	7.3	85
Spelling	5.4	84	7.6	83
Capitalization	5.4	85	7.9	85
Punctuation	5.6	87	7.7	84
Language Usage	5.2	80	7.8	85
Map Reading	4.9	84	7.6	89
Reading Graphs & Tables	5.0	84	7.7	89
Knowledge & Use of Reference Materials	4.7	83	7.4	84
Math Concepts	4.7	82	7.7	92
Math Problem Solving	4.7	87	7.0	85

320

2-B. SCHOOL INTERQUARTILE RANGES .

Rationale, Data, and Data Analysis

Rationale

The interquartile range provides an indication of how the middle 50 percent of the students in a group performed on a test. These could be said to be the typical students in that school because this range is not affected by extreme scores. These data provide an indication of what special programs might be appropriate for a given school. For example, if the entire range is above the 90th percentile rank, it is an indication the school should have a large program for the gifted. If the range is wide, say from the 30th to the 80th percentile rank, the school has to be equipped to meet the needs of students of highly variable ability levels.

Data

The figures on the following pages indicate the national percentile rank for the student at each school's first quartile (Q1), median, and third quartile (Q3). The score at the left end of the bar is Q1, the score at the right end is Q3, the one in the middle is the median. Scores for the CAT Verbal and ITBS Composite are presented. Both are general performance indicators and provide simple data on which to judge the dispersion of achievement in a given school. At the end of this section, the quartile graphs for the county are provided. These can be used to see how a range for a specific school fits into the range for the entire county.

Schools are listed in alphabetical order for each grade and test score. The first page for each grade and type of score follows:

Grade 3 Verbal	- page 274
Grade 3 Composite	- page 283
Grade 5 Verbal	- page 292
Grade 5 Composite	- page 301
Grade 7 Verbal	- page 310
Grade 7 Composite	- page 313
Grade 9 Verbal	- page 316
Grade 9 Composite	- page 319
Grade 11 Verbal	- page 322
Grade 11 Composite	- page 324
County Graphs	- page 326

The national percentile-rank scale at the top of each page is provided to show the characteristics of percentile ranks in a normal distribution. It should be noticed that at the extremes of the distribution percentile ranks are separated by more raw-score points than are the percentile ranks in the middle of the distribution. That is, an increase (or decrease) of 10 percentile-rank units at the extremes represents a greater change in raw-score points than does an increase (or decrease) of 10 percentile-rank units in the middle of the scale.

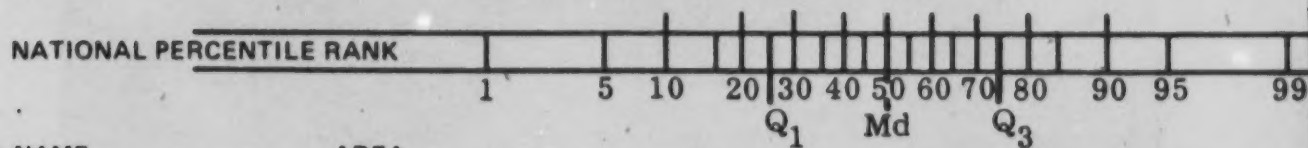
Analysis

No formal statistical analyses were performed. The data are descriptive.

Results

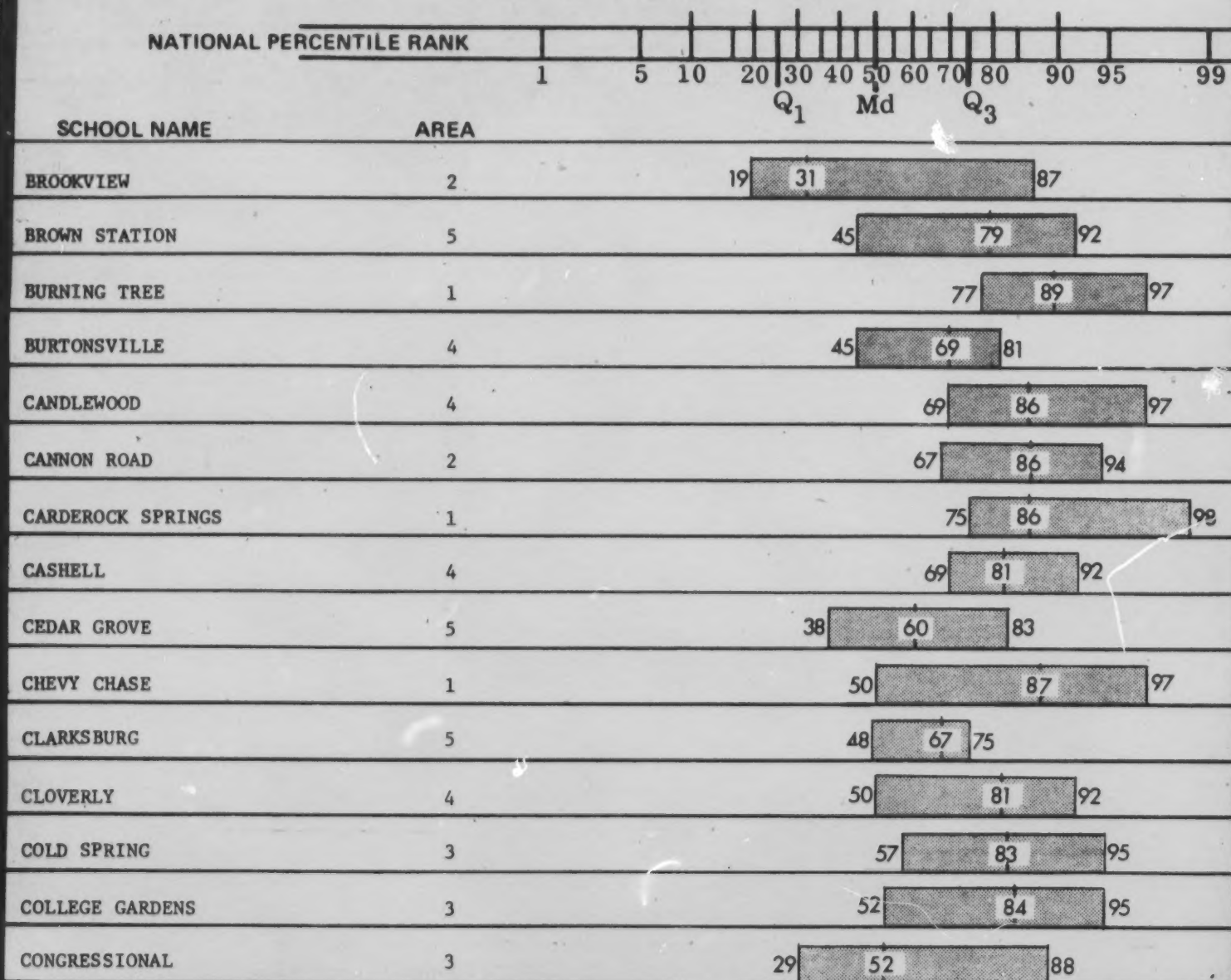
Results are presented in the tables. The range for each school should be reviewed to determine the level and dispersion of performance in the school.

**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT EACH SCHOOL'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
GRADE 3 VERBAL**

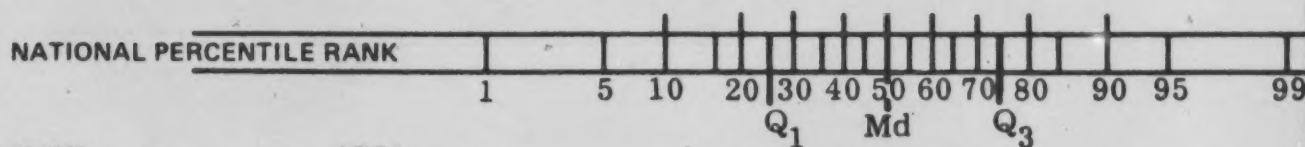


SCHOOL NAME	AREA			
ARCOLA	2	43	65	75
ASHBURTON	1	73	84	95
ASPEN HILL	4	50	75	89
AYRLAWN	1	52	79	92
BANNOCKBURN	1	62	92	98
LUCY BARNSLEY	4	57	84	94
BELLS MILL	3	69	88	97
BELMONT	4	67	83	95
BEL PRE	2	33	69	88
BETHESDA	1	79	91	95
BEVERLY FARMS	3	62	88	96
BRADLEY	1	71	87	95
BROAD ACRES	2	33	50	77
BROOKHAVEN	4	45	71	95
BROOKMONT	1	75	92	97

**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT EACH SCHOOL'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
GRADE 3 VERBAL (Continued)**

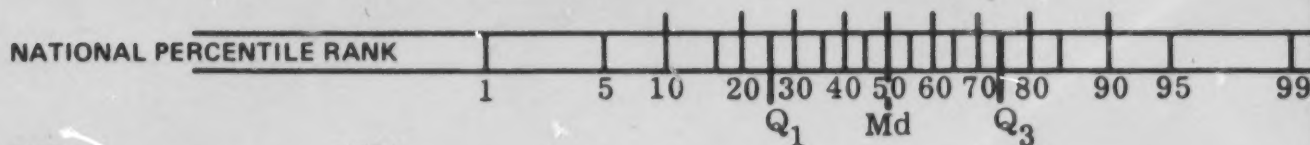


**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT EACH SCHOOL'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
GRADE 3 VERBAL (Continued)**



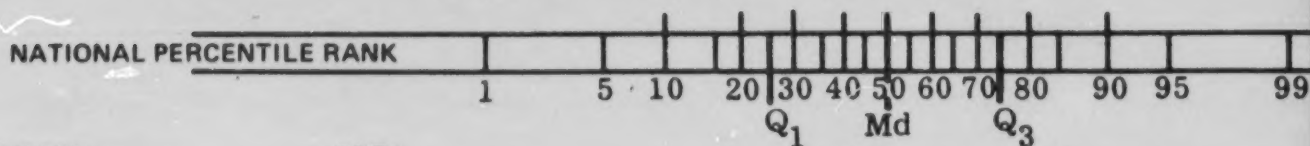
SCHOOL NAME	AREA			
CONNECTICUT PARK	4	38	65	84
CRESTHAVEN	2	62	84	95
DAMASCUS	5	35	73	93
DARNESTOWN	5	62	83	88
DIAMOND	5	50	77	88
DUFIEF	3	71	88	94
EAST SILVER SPRING	2	52	83	94
ENGLISH MANOR	4	50	81	95
FAIRLAND	4	52	81	92
FALLSMEADE	3	71	89	97
FARMLAND	3	84	92	98
FIELDS ROAD	5	48	69	84
FLOWER VALLEY	4	71	81	94
FOREST GROVE	2	71	81	97
FOREST KNOLLS	2	57	75	93

**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT EACH SCHOOL'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
GRADE 3 VERBAL (Continued)**



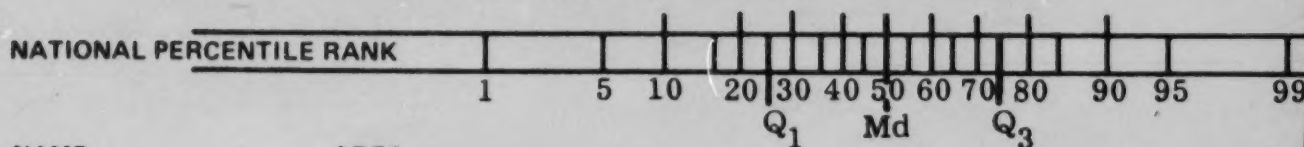
SCHOOL NAME	AREA	
FOUR CORNERS	2	48 71 93
FOX CHAPEL	5	33 60 89
GAITHERSBURG	5	31 60 83
GALWAY	4	52 79 94
GARRETT PARK	3	67 84 96
GEORGETOWN HILL	3	65 83 92
GEORGIAN FOREST	2	57 73 88
GERMANTOWN	5	48 83 93
GLEN HAVEN	2	48 83 95
GLENALLAN	2	57 73 92
GREENWOOD	4	60 81 93
GROSVENOR	1	71 87 95
HARMONY HILLS	4	40 75 92
HIGHLAND	1	35 62 79
HIGHLAND VIEW	2	60 79 92

**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT EACH SCHOOL'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
GRADE 3 VERBAL (Continued)**



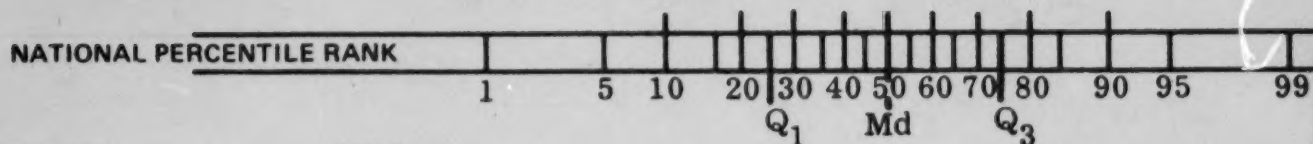
SCHOOL NAME	AREA			
HOLIDAY PARK	4	19	43	65
HUNGERFORD PARK	3	45	81	95
JACKSON ROAD	2	43	69	91
KEMP MILL	2	57	79	94
KENSINGTON	1	33	62	97
LAKE NORMANDY	3	67	84	95
LAKEWOOD	3	40	81	95
LARCHMONT	1	40	77	97
LAYTONSVILLE	5	40	71	92
LONE OAK	3	25	43	77
LUXMANOR	3	69	86	95
LYNNBROOK	1	57	81	92
MARYVALE	3	16	38	71
MEADOW HALL	3	48	73	91
MILL CREEK TOWNE	4	57	84	97

**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT EACH SCHOOL'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
GRADE 3 VERBAL (Continued)**



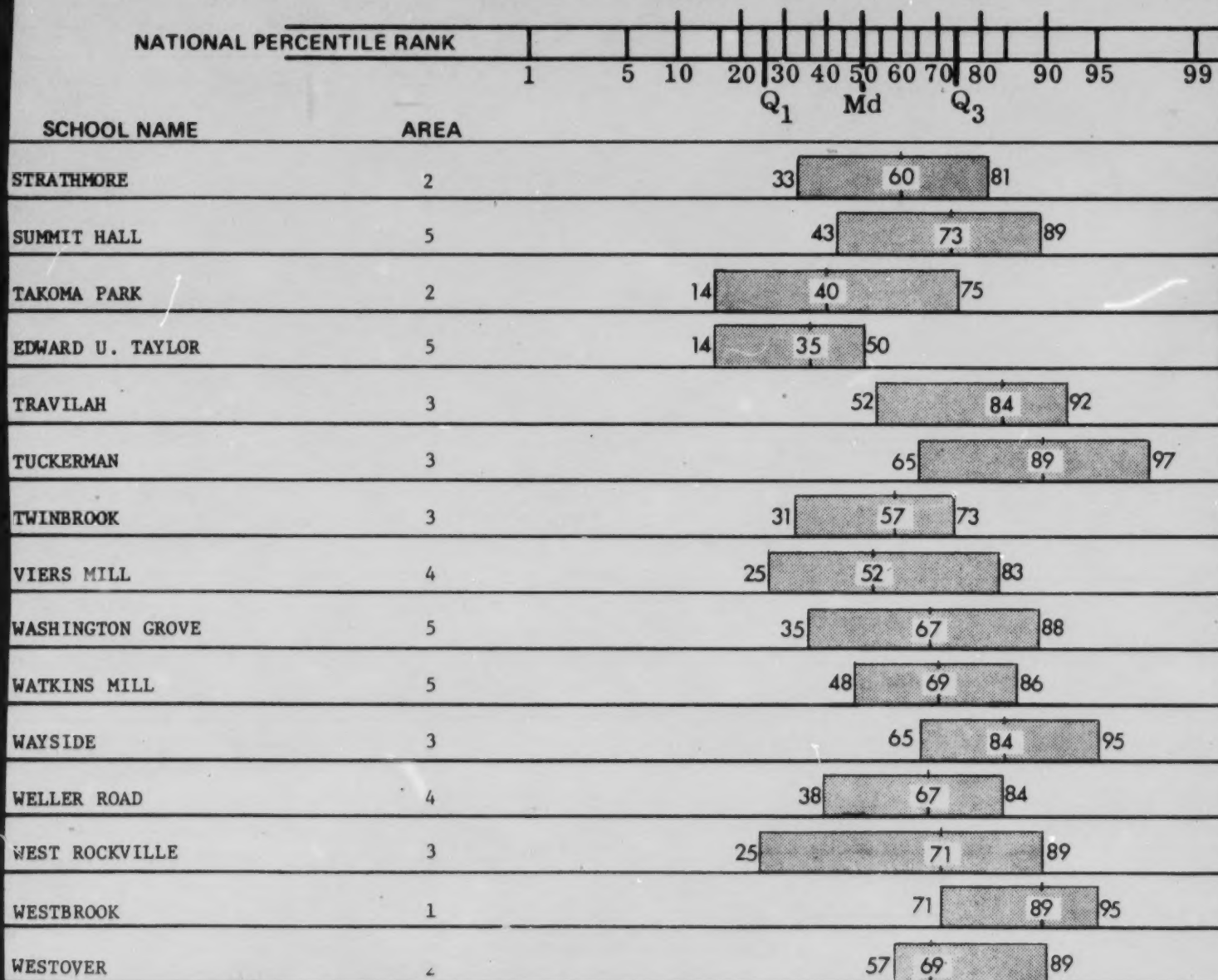
SCHOOL NAME	AREA			
MONOCACY	5	31	69	87
MONTROSE	3	33	57	79
NEW HAMPSHIRE ESTATES	2	35	57	77
NORTH CHEVY CHASE	1	60	84	93
NORTH LAKE	4	57	81	95
OAK VIEW	2	45	71	91
OAKLAND TERRACE	1	45	73	92
OLNEY	4	48	73	93
WILLIAM TYLER PAGE	4	62	83	95
PARKWOOD	1	50	67	93
PINE CREST	2	52	73	93
PLEASANT VIEW	1	45	60	84
POOLESVILLE	5	48	73	88
POTOMAC	3	69	88	97
RADNOR	1	60	69	89

**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT EACH SCHOOL'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
GRADE 3 VERBAL (Continued)**



SCHOOL NAME	AREA			
RITCHIE PARK	3	69	86	95
ROCK CREEK FOREST	1	50	73	91
ROCK CREEK PALISADES	1	52	84	95
ROCK CREEK VALLEY	4	62	83	95
ROCKING HORSE ROAD	4	33	67	88
ROLLING TERRACE	2	52	73	86
ROLLINGWOOD	1	73	87	94
ROSEMONT	5	45	65	94
SADDLEBROOK	2	62	81	95
SEVEN LOCKS	3	75	91	95
SHERWOOD	4	40	69	89
SOMERSET	1	57	83	95
SOUTH LAKE	5	62	79	92
STEDWICK	5	52	84	93
STONEGATE	4	71	87	95

**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT EACH SCHOOL'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
GRADE 3 VERBAL (Continued)**

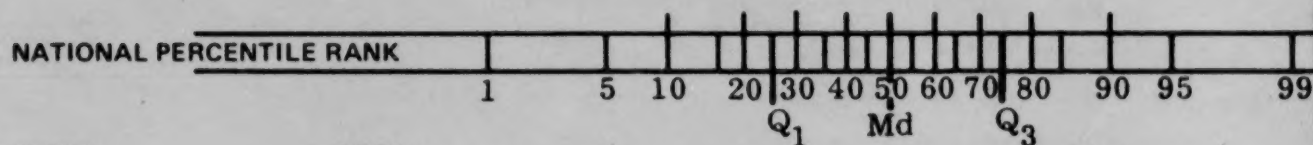


NATIONAL PERCENTILE RANK

A horizontal scale for National Percentile Rank from 1 to 99. Major tick marks are labeled at 1, 5, 10, 20, 30, 40, 50, 60, 70, 80, 90, 95, and 99. Below the scale, three specific points are marked: Q_1 is located between 20 and 30, Md is located between 40 and 50, and Q_3 is located between 70 and 80.

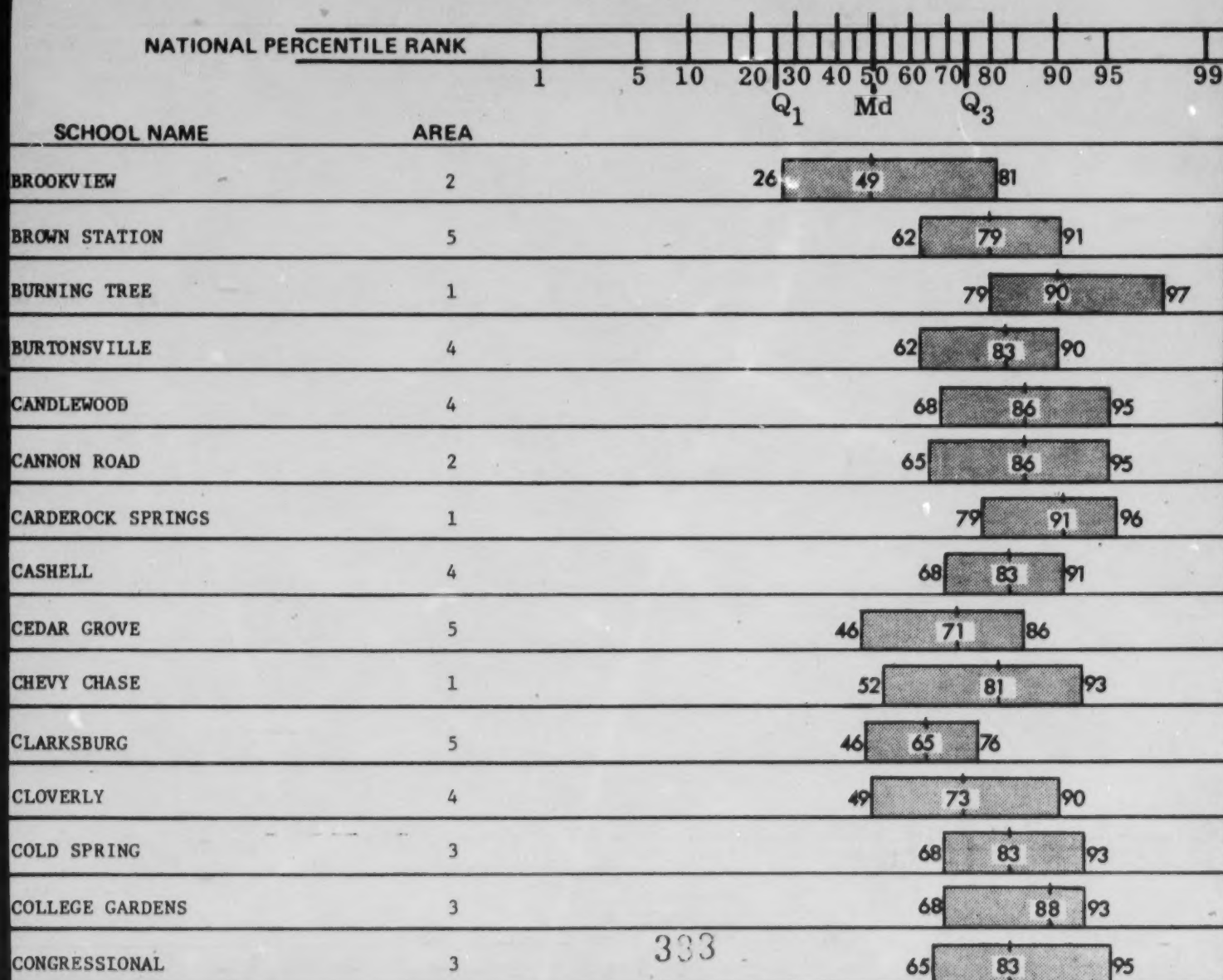
331

**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT EACH SCHOOL'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
GRADE 3 COMPOSITE**

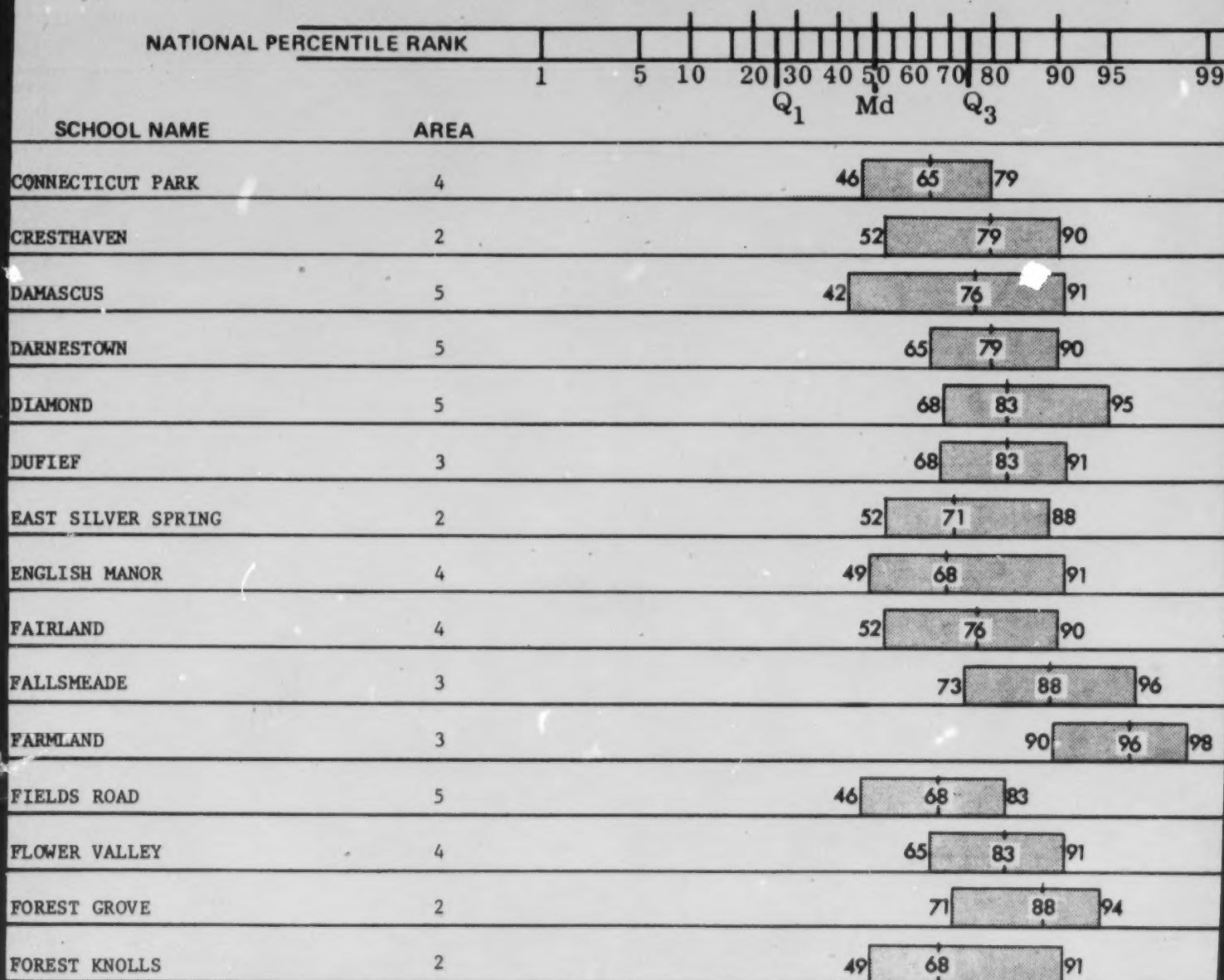


SCHOOL NAME	AREA	
ARCOLA	2	46 71 81
ASHBURTON	1	86 90 95
ASPEN HILL	4	34 58 83
AYRLAWN	1	62 79 91
BANNOCKBURN	1	71 88 95
LUCY BARNESLEY	4	68 83 91
BELLS MILL	3	73 88 95
BELMONT	4	62 79 90
BEL PRE	2	38 71 88
BETHESDA	1	90 93 96
BEVERLY FARMS	3	71 83 93
BRADLEY	1	81 94 97
BROAD ACRES	2	30 46 76
BROOKHAVEN	4	52 79 91
BROOKMONT	1	81 90 95

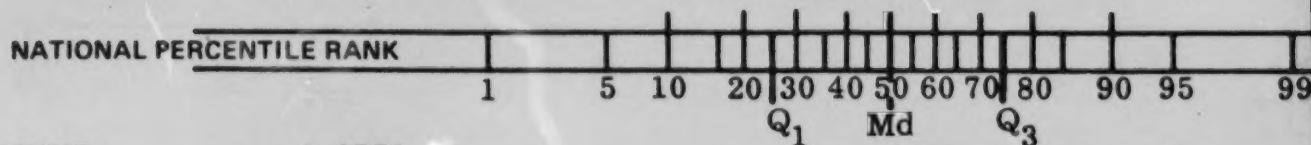
**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT EACH SCHOOL'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
GRADE 3 COMPOSITE (Continued)**



**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT EACH SCHOOL'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
GRADE 3 COMPOSITE (Continued)**

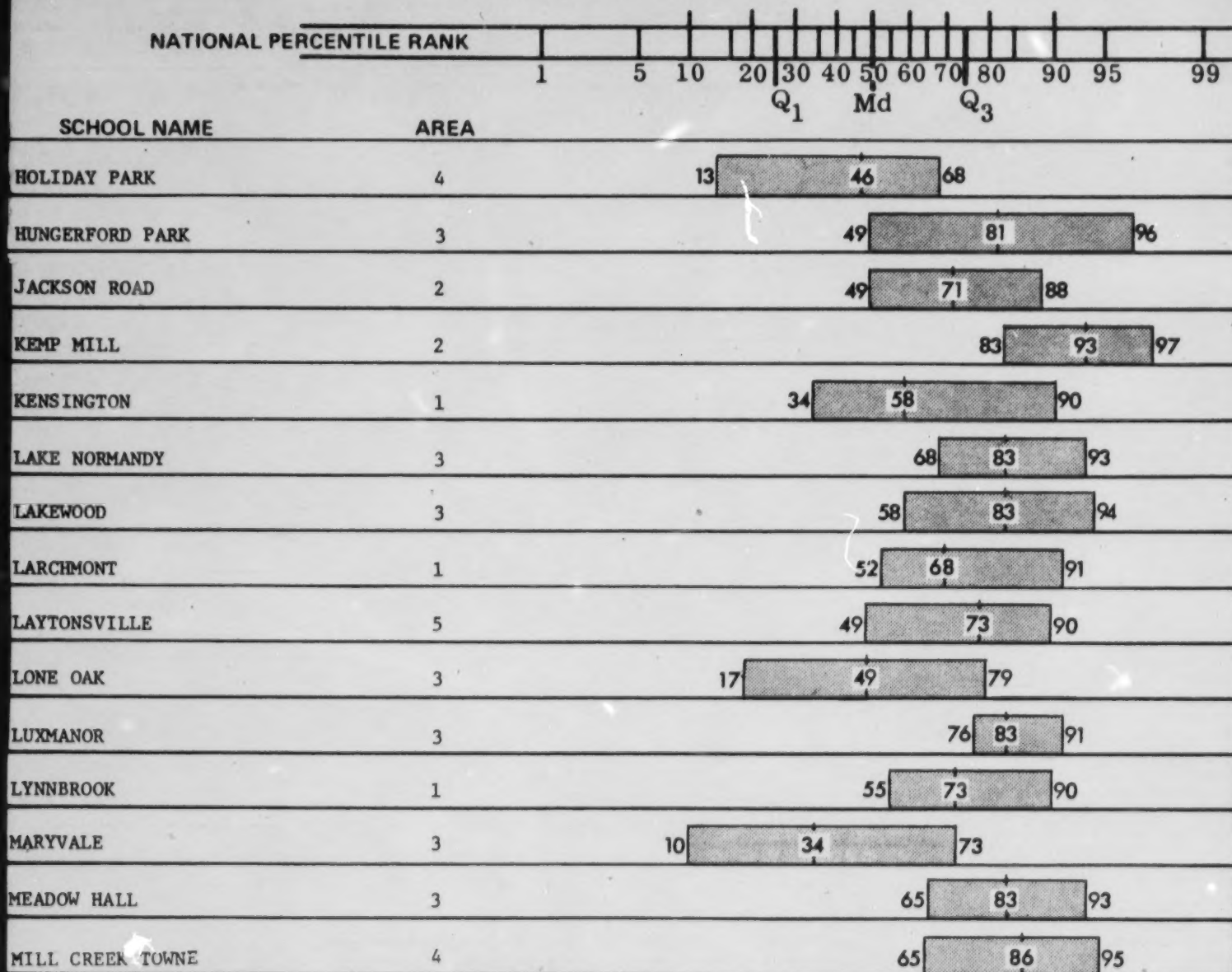


**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT EACH SCHOOL'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
GRADE 3 COMPOSITE (Continued)**



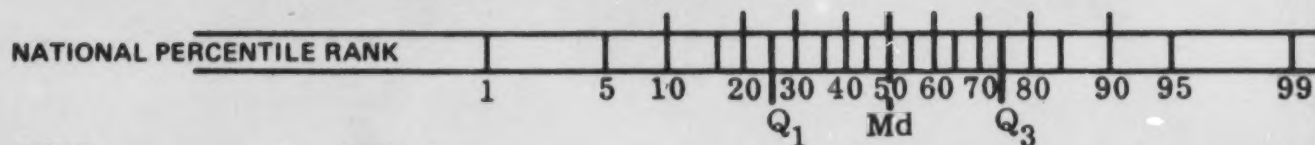
SCHOOL NAME	AREA	
FOUR CORNERS	2	55 73 91
FOX CHAPEL	5	46 68 90
GAITHERSBURG	5	34 65 79
GALWAY	4	52 76 88
GARRETT PARK	3	68 88 94
GEORGETOWN HILL	3	68 79 90
GEORGIAN FOREST	2	58 75 86
GERMANTOWN	5	65 88 94
GLEN HAVEN	2	55 81 91
GLENALLAN	2	55 73 86
GREENWOOD	4	62 79 91
GROSVENOR	1	65 81 94
HARMONY HILLS	4	49 73 91
HIGHLAND	1	49 65 79
HIGHLAND VIEW	2	65 81 91

**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT EACH SCHOOL'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
GRADE 3 COMPOSITE (Continued)**



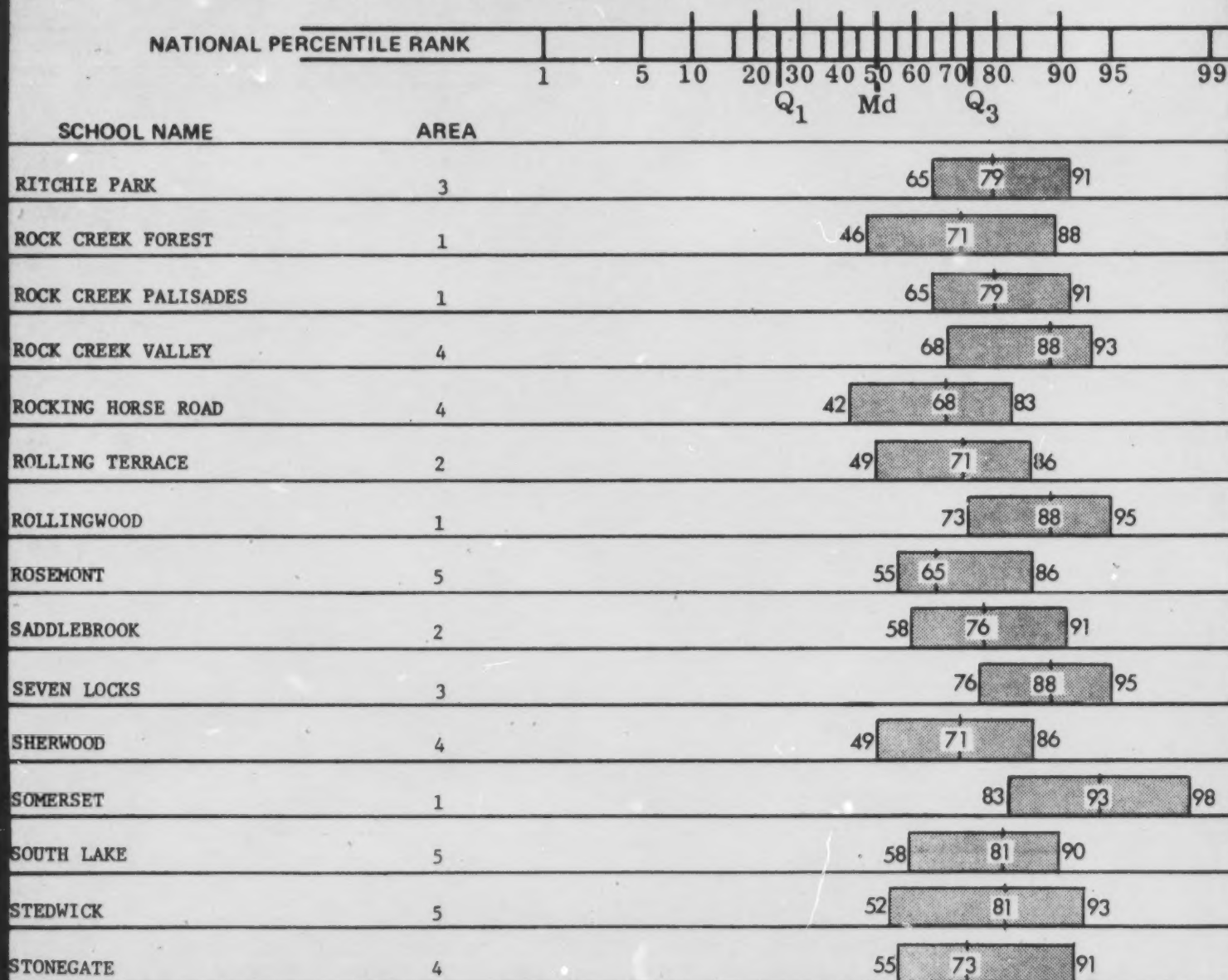
3360

**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT EACH SCHOOL'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
GRADE 3 COMPOSITE (Continued)**

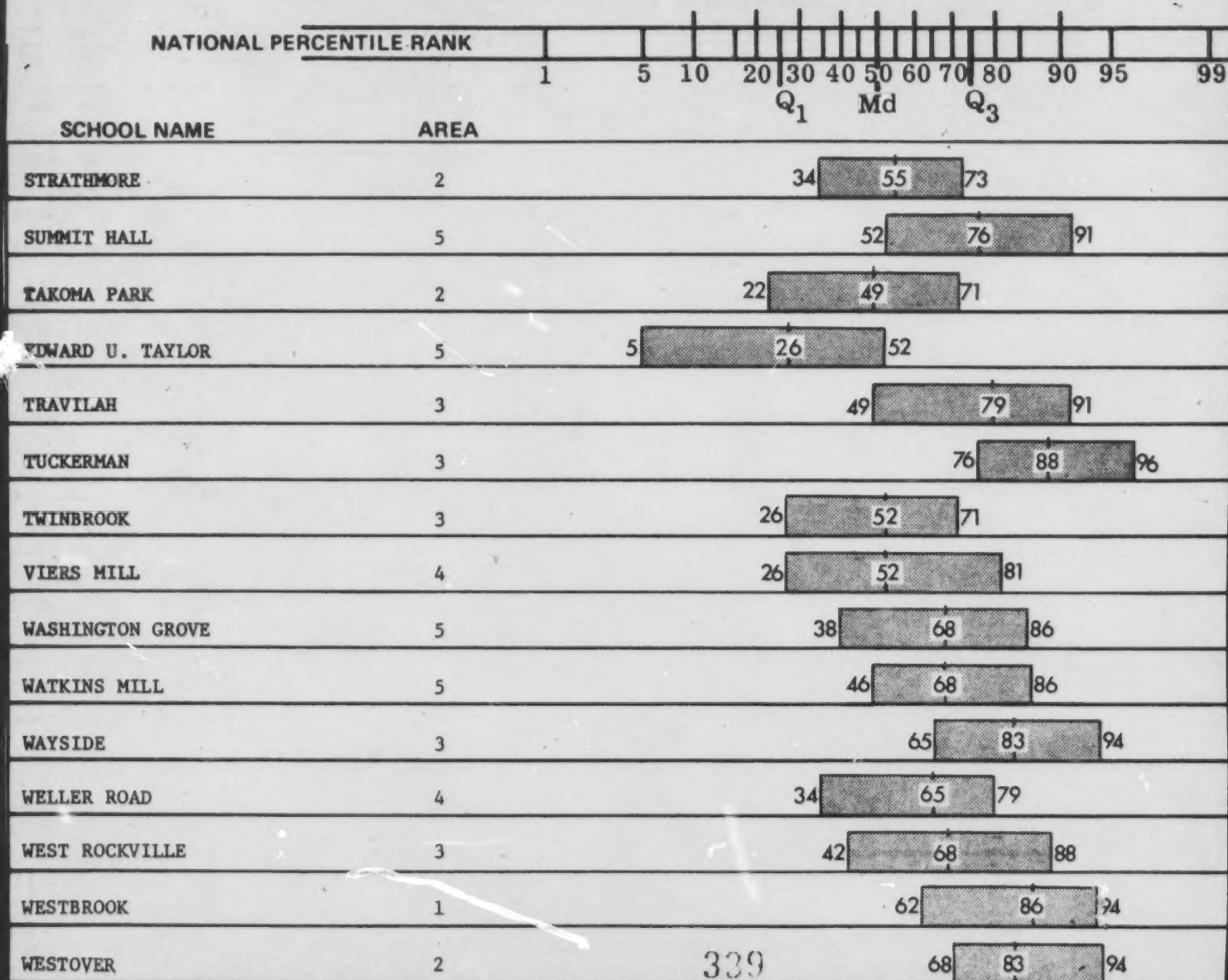


SCHOOL NAME	AREA			
MONOCACY	5	46	68	88
MONTROSE	3	49	73	88
NEW HAMPSHIRE ESTATES	2	49	62	79
NORTH CHEVY CHASE	1		68	88 93
NORTH LAKE	4		62 73	91
OAK VIEW	2	46	73	83
OAKLAND TERRACE	1	49	76	86
OLNEY	4	49	68	88
WILLIAM TYLER PAGE	4		62 79	88
PARKWOOD	1	55	79	91
PINE CREST	2		62 73	91
PLEASANT VIEW	1	42	55	76
POOLESVILLE	5	49	68	86
POTOMAC	3			88 95 99
RADNOR	1		68 79	91

**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT EACH SCHOOL'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
GRADE 3 COMPOSITE (Continued)**



**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT EACH SCHOOL'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
GRADE 3 COMPOSITE (Continued)**



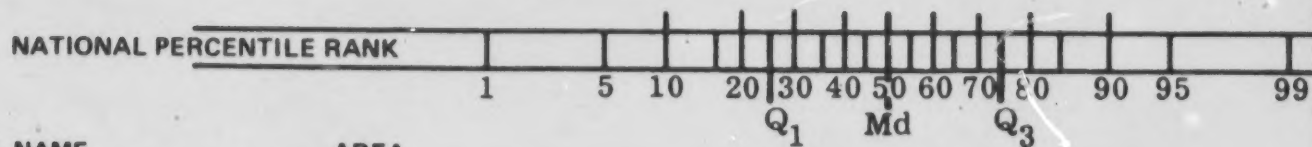
NATIONAL PERCENTILE RANK

1 5 10 20 30 40 50 60 70 80 90 95 99

Q_1 Md Q_3

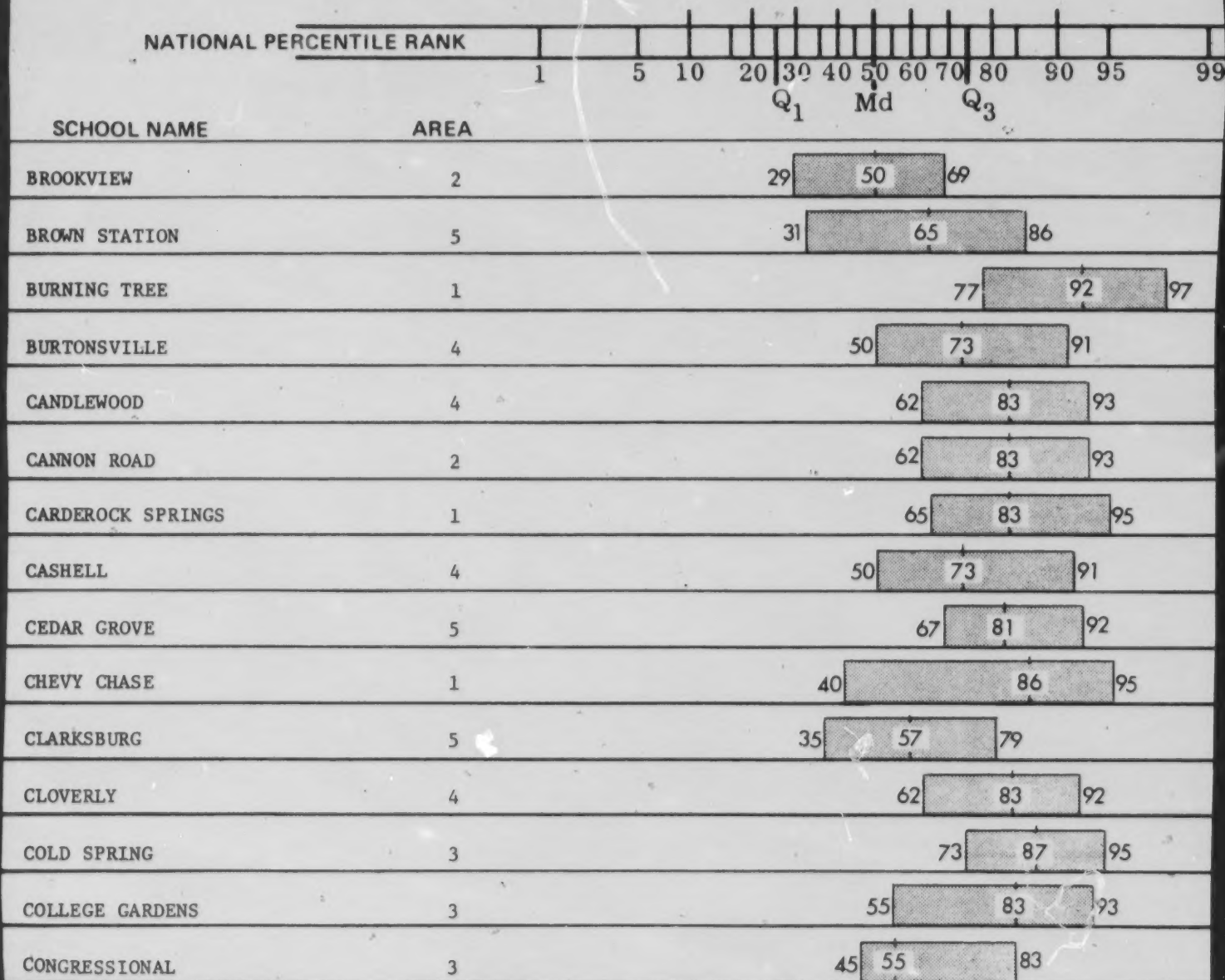
340

**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT EACH SCHOOL'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
GRADE 5 VERBAL**

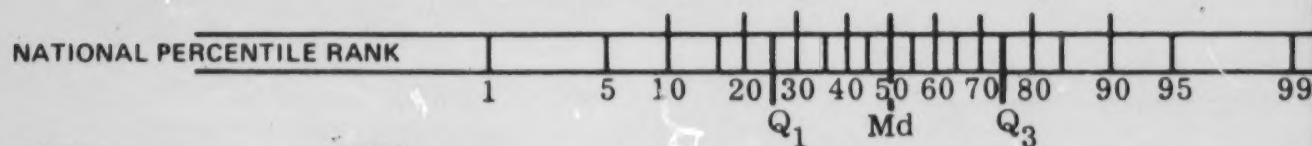


SCHOOL NAME	AREA			
ARCOLA	2	35	57	77
ASHBURTON	1	55	79	92
ASPEN HILL	4	29	50	69
AYRLAWN	1	69	75	94
BANNOCKBURN	1	77	89	97
LUCY BARNSLEY	4	71	87	95
BELLS MILL	3	55	83	93
BELMONT	4	45	65	92
BEL PRE	2	43	71	92
BETHESDA	1	73	91	95
BEVERLY FARMS	3	67	84	95
BRADLEY	1	71	84	95
BROAD ACRES	2	35	60	75
BROOKHAVEN	4	45	69	88
BROOKMONT	1	341	71	87

**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT EACH SCHOOL'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
GRADE 3 VERBAL (Continued)**

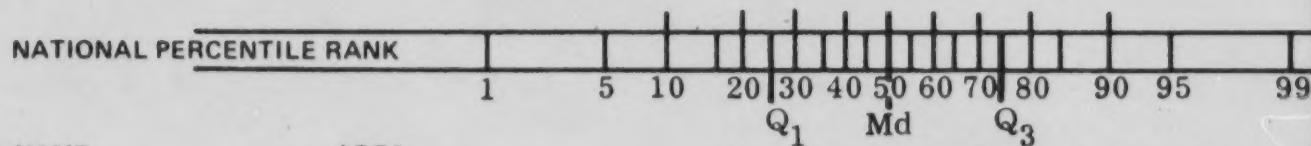


**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT EACH SCHOOL'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
GRADE 5 VERBAL (Continued)**



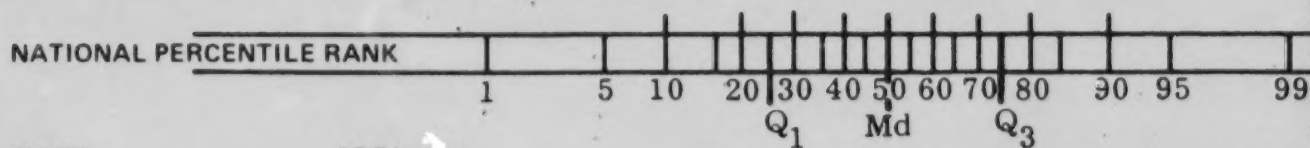
SCHOOL NAME	AREA			
CONNECTICUT PARK	4	45	67	87
CRESTHAVEN	2	67	83	95
DAMASCUS	5	29	71	93
DARNESTOWN	5	69	87	94
DIAMOND	5	62	83	93
DUFIEF	3	50	77	92
ENGLISH MANOR	4	48	69	88
FAIRLAND	4	52	77	93
FALLSMEADE	3	62	77	95
FARMLAND	3	73	87	95
FIELDS ROAD	5	25	62	86
FLOWER VALLEY	4	65	84	94
FOREST GROVE	2	50	69	91
FOREST KNOLLS	2	21	69	88
FOUR CORNERS	2	50	69	88

**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT EACH SCHOOL'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
GRADE 5 VERBAL (Continued)**



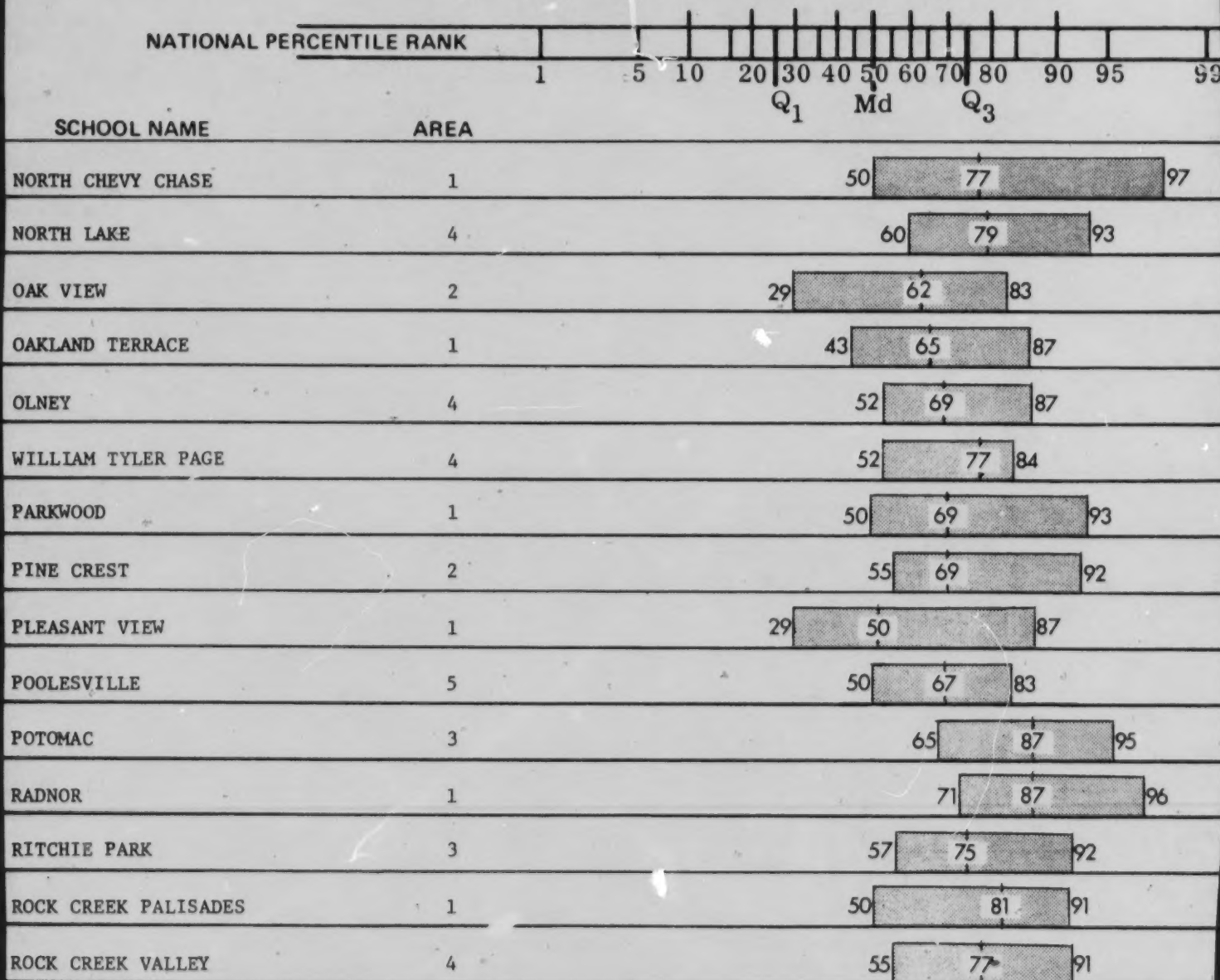
SCHOOL NAME	AREA			
FOX CHAPEL	5	21	57	73
GAITHERSBURG	5	25	43	67
GALWAY	4		60	77
GARRETT PARK	3		75	91
GEORGETOWN HILL	3		69	83
GEORGIAN FOREST	2		57	79
GERMANTOWN	5	45	71	89
GLEN HAVEN	2		52	73
GLENALLAN	2		48	69
GREENWOOD	4		60	79
GROSVENOR	1		69	83
HARMONY HILLS	4		45	65
HIGHLAND	1	31	57	75
HIGHLAND VIEW	2		48	73
HOLIDAY PARK	4	344	29	55

**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT EACH SCHOOL'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
GRADE 5 VERBAL (Continued)**

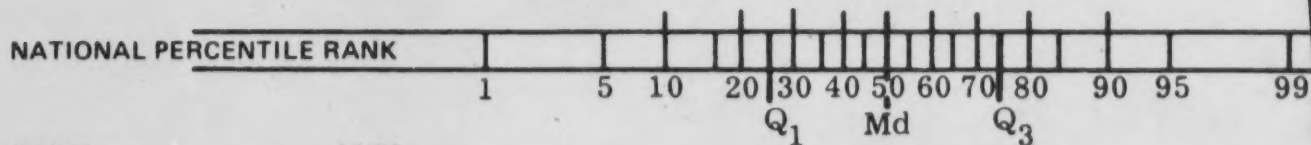


SCHOOL NAME	AREA	
HUNGERFORD PARK	3	57 71 87
JACKSON ROAD	2	55 77 92
KEMP MILL	2	55 71 92
KENSINGTON	1	40 57 77
LAKE NORMANDY	3	77 92 99
LAKEWOOD	3	43 73 92
LARCHMONT	1	33 67 87
LAYTONSVILLE	5	45 73 91
LONE OAK	3	19 57 77
LUXMANOR	3	67 77 92
LYNNBROOK	1	67 81 96
MEADOW HALL	3	60 75 93
MILL CREEK TOWNE	4	43 75 92
MONOCACY	5	48 65 89
MONTROSE	3	40 60 69

**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT EACH SCHOOL'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
GRADE 5 VERBAL (Continued)**

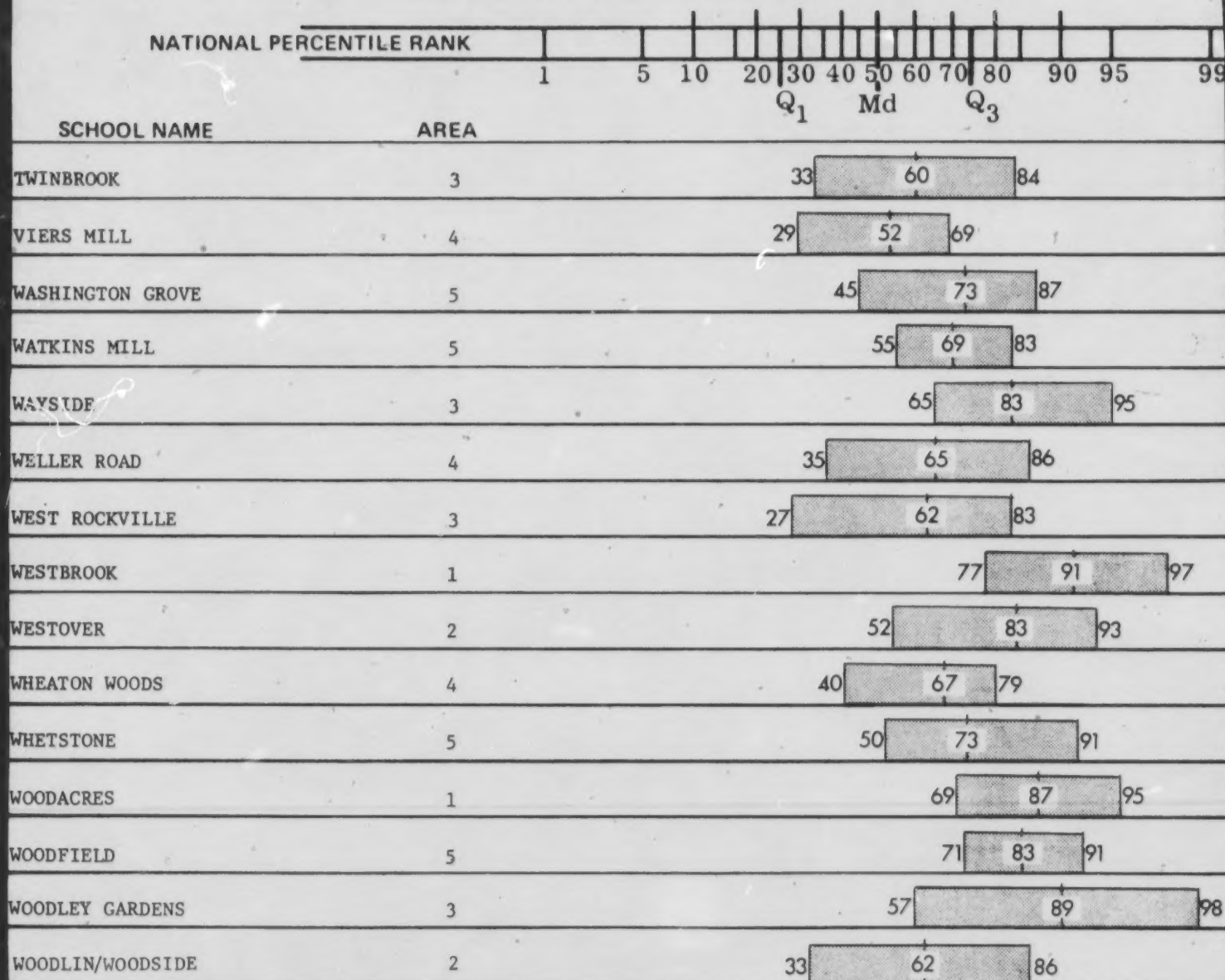


**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT EACH SCHOOL'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
GRADE 5 VERBAL (Continued)**

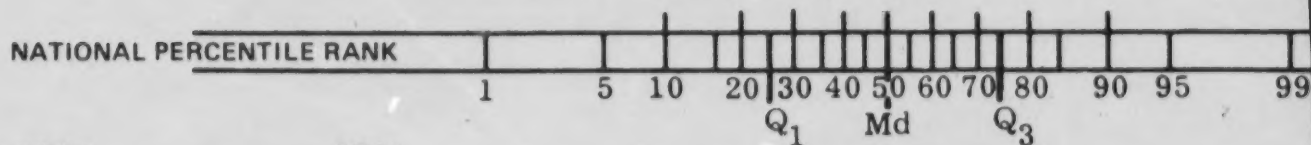


SCHOOL NAME	AREA	
ROCKING HORSE ROAD	4	48 67 86
ROLLINGWOOD	1	55 83 96
ROSEMONT	5	40 77 92
SADDLEBROOK	2	57 86 95
SEVEN LOCKS	3	65 86 95
SHERWOOD	4	40 65 87
SOMERSET	1	65 83 95
SOUTH LAKE	5	52 75 88
STEDWICK	5	71 91 97
STONEGATE	4	50 79 92
STRATHMORE	2	43 75 92
SUMMIT HALL	5	40 73 89
EDWARD U. TAYLOR	5	21 52 75
TRAVILAH	3	40 67 87
TUCKERMAN	3	75 92 96

**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT EACH SCHOOL'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
GRADE 5 VERBAL (Continued)**



**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT EACH SCHOOL'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
GRADE 5 VERBAL (Continued)**



SCHOOL NAME

AREA

WYNGATE

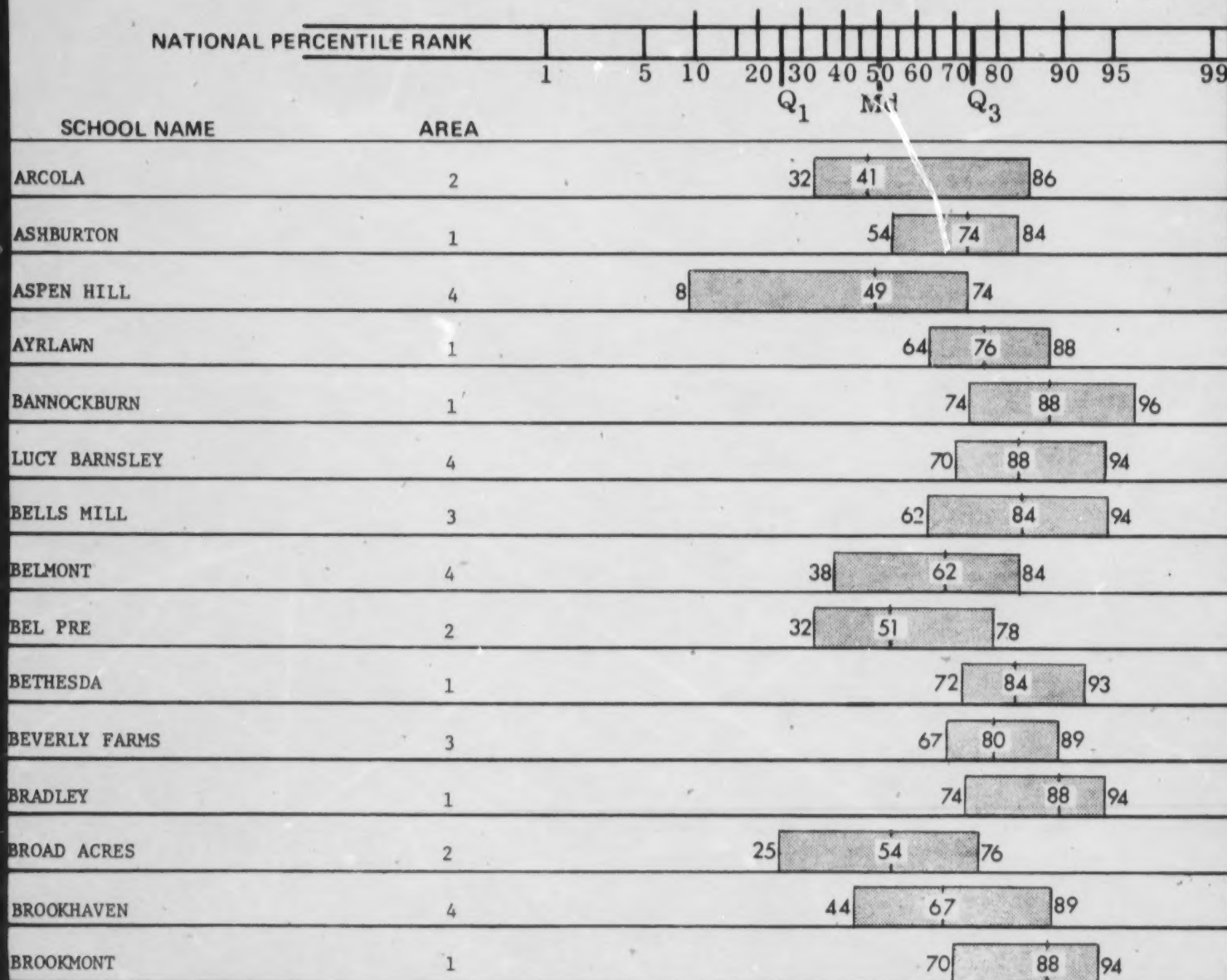
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79

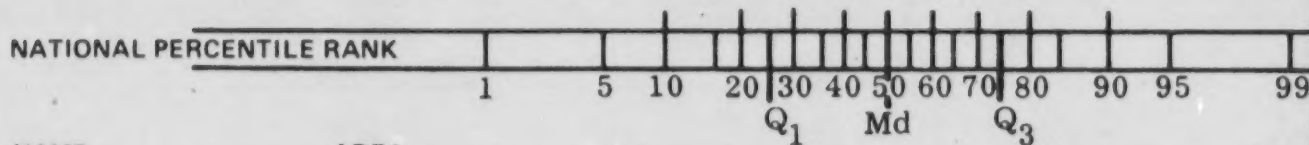
93

98

**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT EACH SCHOOL'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
GRADE 5 COMPOSITE**

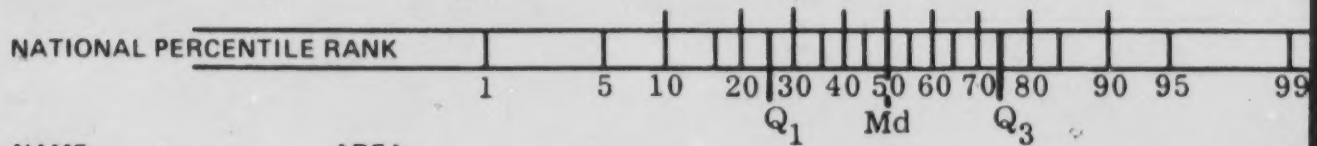


**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT EACH SCHOOL'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
GRADE 5 COMPOSITE (Continued)**



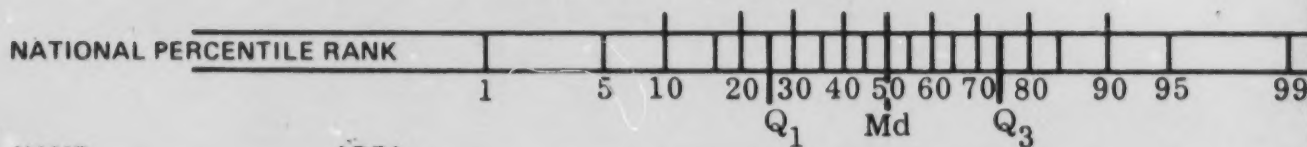
SCHOOL NAME	AREA	
BROOKVIEW	2	10 25 54
BROWN STATION	5	38 62 84
BURNING TREE	1	78 92 96
BURTONSVILLE	4	46 64 82
CANDLEWOOD	4	67 82 92
CANNON ROAD	2	56 78 90
CARDEROCK SPRINGS	1	64 86 92
CASHELL	4	51 72 86
CEDAR GROVE	5	56 76 84
CHEVY CHASE	1	46 78 93
CLARKSBURG	5	22 54 74
CLOVERLY	4	67 84 93
COLD SPRING	3	70 86 94
COLLEGE GARDENS	3	56 80 90
CONGRESSIONAL	3	32 56 78

**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT EACH SCHOOL'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
GRADE 5 COMPOSITE (Continued)**



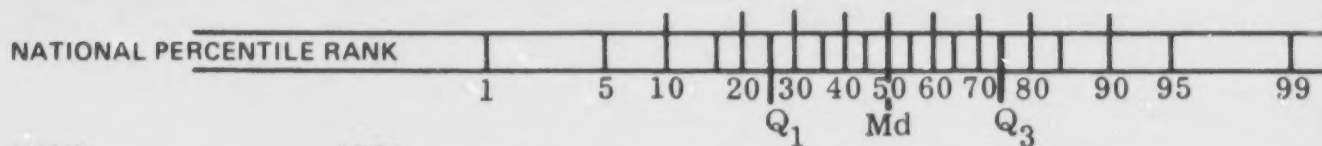
SCHOOL NAME	AREA	1	2	3	
CONNECTICUT PARK	4	38	56	80	
CRESTHAVEN	2		62	76	89
DAMASCUS	5	35		72	94
DARNESTOWN	5		64	82	92
DIAMOND	5		51	78	89
DUFIEF	3	38		64	88
ENGLISH MANOR	4	44		67	86
FAIRLAND	4	49		74	89
FALLSMEADE	3		59	80	92
FARMLAND	3		70	86	93
FIELDS ROAD	5	15		44	70
FLOWER VALLEY	4		56	78	89
FOREST GROVE	2	38		67	86
FOREST KNOLLS	2	27		62	86
FOUR CORNERS	2		51	67	84

**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT EACH SCHOOL'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
GRADE 5 COMPOSITE (Continued)**



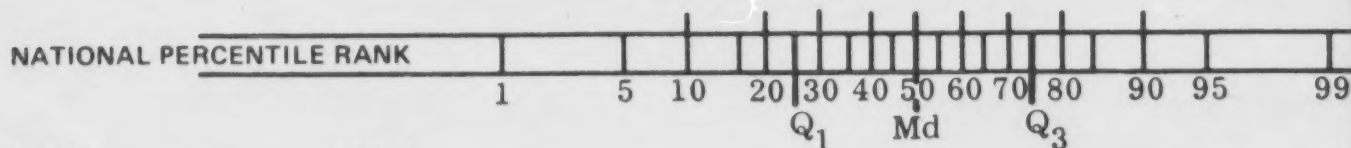
SCHOOL NAME	AREA			
FOX CHAPEL	5	17	51	80
GAITHERSBURG	5	20	38	64
GALWAY	4		64	82 93
GARRETT PARK	3		59	86 94
GEORGETOWN HILL	3		62	82 89
GEORGIAN FOREST	2		64	84 89
GERMANTOWN	5	38	72	90
GLEN HAVEN	2	41	67	89
GLENALLAN	2	30	64	82
GREENWOOD	4	46	67	86
GROSVENOR	1		67	78 90
HARMONY HILLS	4	46	67	88
HIGHLAND	1	38	62	84
HIGHLAND VIEW	2		49	84 92
HOLIDAY PARK	4	15	32	76

**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT EACH SCHOOL'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
GRADE 5 COMPOSITE (Continued)**



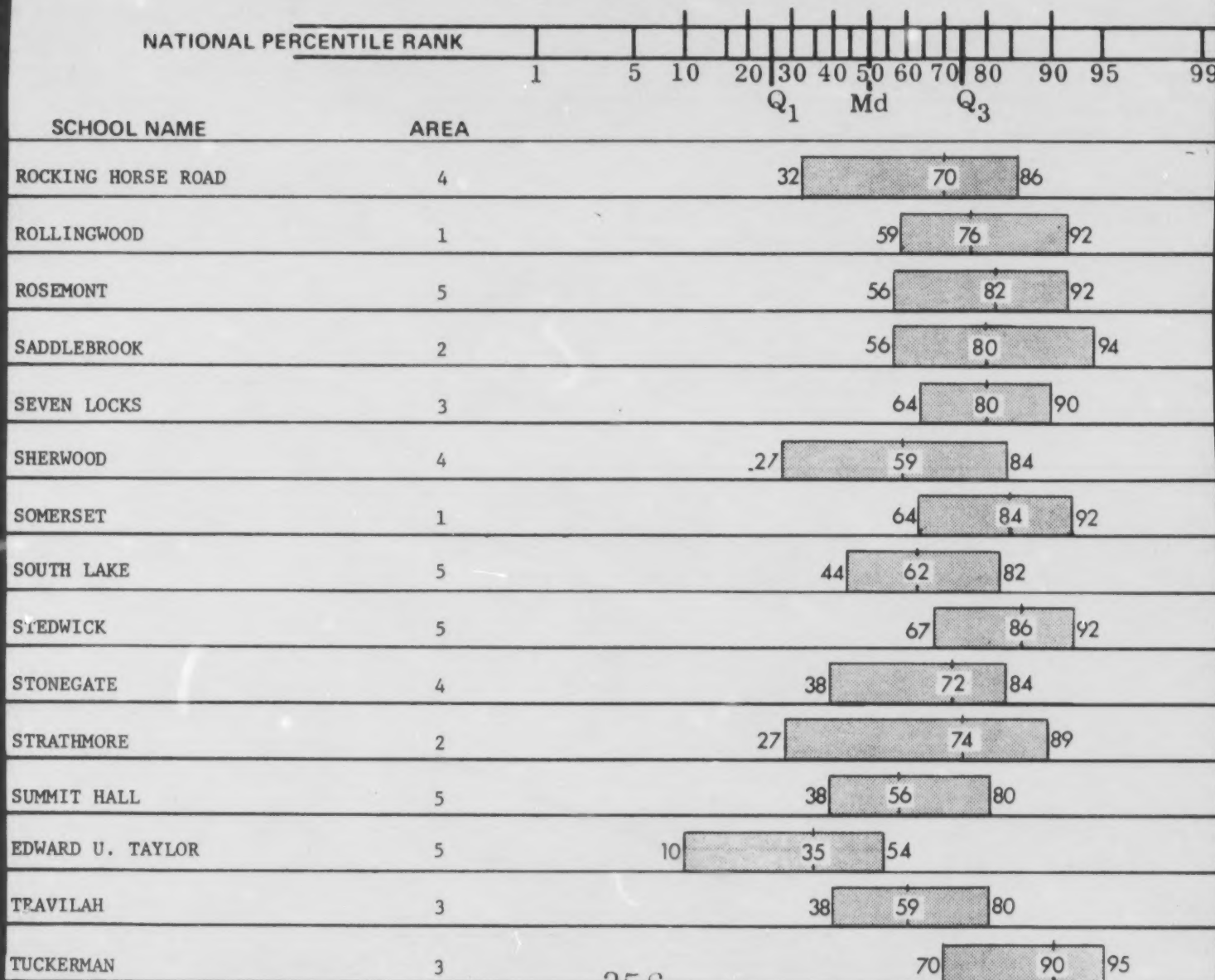
SCHOOL NAME	AREA			
HUNGERFORD PARK	3	56	70	86
JACKSON ROAD	2	56	74	89
KEMP MILL	2	54	72	86
KENSINGTON	1	32	62	80
LAKE NORMANDY	3	70	88	97
LAKEWOOD	3	41	72	88
LARCHMONT	1	27	64	80
LAYTONSVILLE	5	41	70	88
LONE OAK	3	20	46	67
LUXMANOR	3	70	78	86
LYNNBROOK	1	64	74	92
MEADOW HALL	3	56	67	92
MILL CREEK TOWNE	4	32	67	88
MONOCACY	5	32	49	78
MONTROSE	3	27	56	67

**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT EACH SCHOOL'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
GRADE 5 COMPOSITE (Continued)**

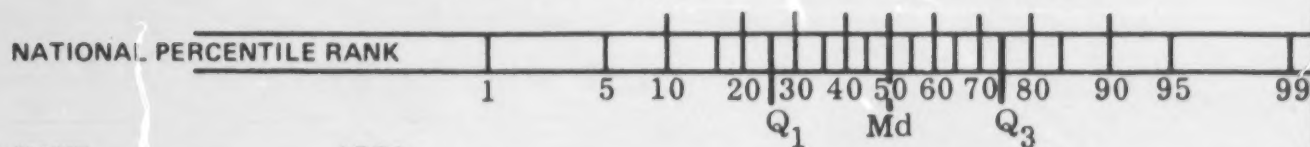


SCHOOL NAME	AREA			
NORTH CHEVY CHASE	1	64	88	97
NORTH LAKE	4	56	78	88
OAK VIEW	2	27	54	78
OAKLAND TERRACE	1	32	54	80
OLNEY	4	46	70	82
WILLIAM TYLER PAGE	4	46	74	90
PARKWOOD	1	49	76	90
PINE CREST	2	35	67	86
PLEASANT VIEW	1	30	51	72
POOLESVILLE	5	32	62	80
POTOMAC	3	62	82	94
RADNOR	1	70	82	94
RITCHIE PARK	3	51	74	90
ROCK CREEK PALISADES	1	38	67	84
ROCK CREEK VALLEY	4	54	67	89

**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT EACH SCHOOL'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
GRADE 5 COMPOSITE (Continued)**

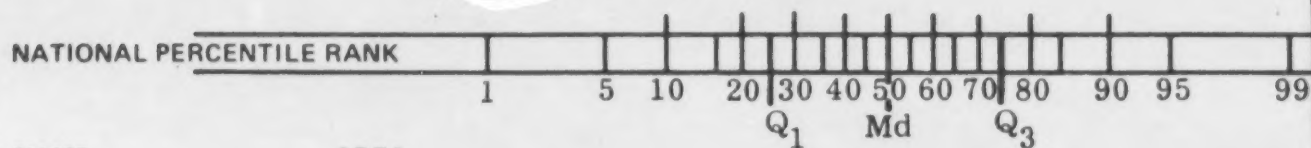


**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT EACH SCHOOL'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
GRADE 5 COMPOSITE (Continued)**



SCHOOL NAME	AREA			
TWINBROOK	3	22	51	76
VIERS MILL	4	32	56	72
WASHINGTON GROVE	5	30	54	80
WATKINS MILL	5	41	67	84
WAYSIDE	3		59	78 92
WELLER ROAD	4	30	49	72
WEST ROCKVILLE	3	22	44	88
WESTBROOK	1		62	82 90
WESTOVER	2		46	74 90
WHEATON WOODS	4	35	59	76
WHETSTONE	5	46	74	86
WOODACRES	1		67	86 94
WOODFIELD	5		72	88 92
WOODLEY GARDENS	3		59	84 95
WOODLIN/WOODSIDE	2	357 22	49	72

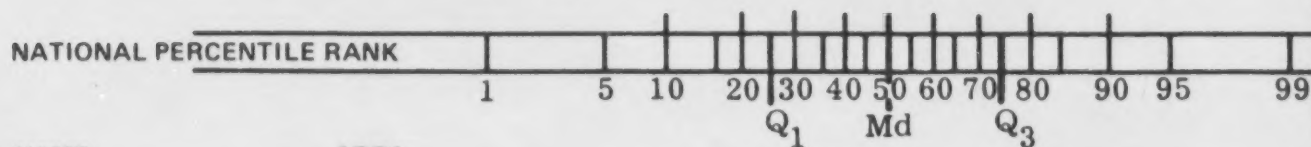
**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT EACH SCHOOL'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
GRADE 5 COMPOSITE (Continued)**



SCHOOL NAME	AREA	
WYNGATE	1	76 90 97

250 358

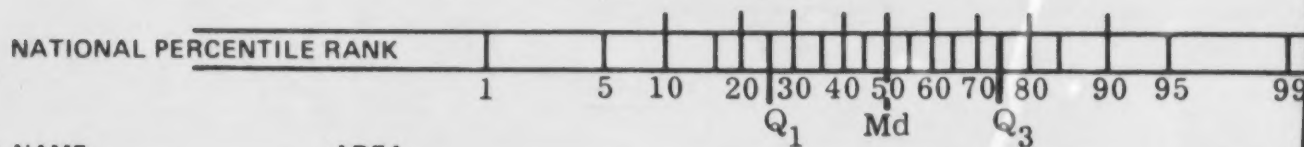
**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT EACH SCHOOL'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
GRADE 7 VERBAL**



SCHOOL NAME	AREA	
ARGYLE JUNIOR	2	45 67 87
JOHN T. BAKER JUNIOR	5	31 57 79
BENJAMIN BANNEKER JUNIOR	4	50 69 83
COL. JOSEPH BELT JUNIOR	4	27 48 71
EDWIN W. BROOME MIDDLE	3	29 50 73
CABIN JOHN JUNIOR	3	52 79 92
EASTERN JUNIOR	2	31 60 83
WM. H. FARQUHAR MIDDLE	4	40 60 83
ROBERT FROST JUNIOR	3	52 73 91
GAITHERSBURG JUNIOR	5	27 52 79
HERBERT HOOVER JUNIOR	3	55 79 92
KENSINGTON JUNIOR	1	35 65 87
FRANCIS SCOTT KEY JUNIOR	2	35 67 84
COL. E. BROOKE LEE JUNIOR	2	48 69 87
LELAND JUNIOR	1	60 79 96

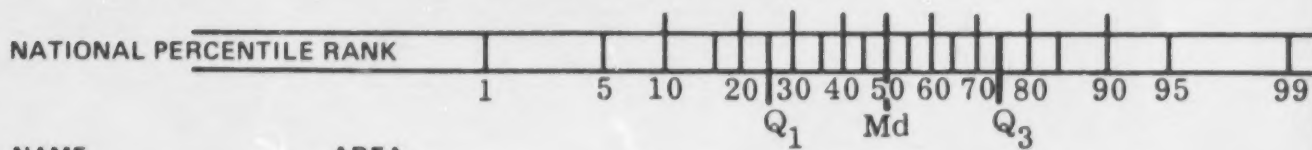
359

**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT EACH SCHOOL'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
GRADE 7 VERBAL (Continued)**



SCHOOL NAME	AREA	
MONTGOMERY VILLAGE JUNIOR	5	48 73 87
NEWPORT JUNIOR	1	29 55 77
NORTH BETHESDA JUNIOR	1	55 79 93
PARKLAND JUNIOR	4	40 60 79
POOLESVILLE HIGH	5	23 55 81
THOMAS W. PYLE JUNIOR	1	60 81 92
RANDOLPH JUNIOR	4	27 48 73
REDLAND JUNIOR	4	45 69 91
RIDGEVIEW JUNIOR	5	31 55 79
SLIGO JUNIOR	2	35 60 83
TAKOMA PARK JUNIOR	2	25 43 69
TILDEN JUNIOR	3	60 79 92
JULIUS WEST JUNIOR	3	38 69 87
WESTERN JUNIOR	1	57 81 94
WHITE OAK JUNIOR	2	45 69 87

**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT EACH SCHOOL'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
GRADE 7 VERBAL (Continued)**



SCHOOL NAME

AREA

EARLE B. WOOD JUNIOR

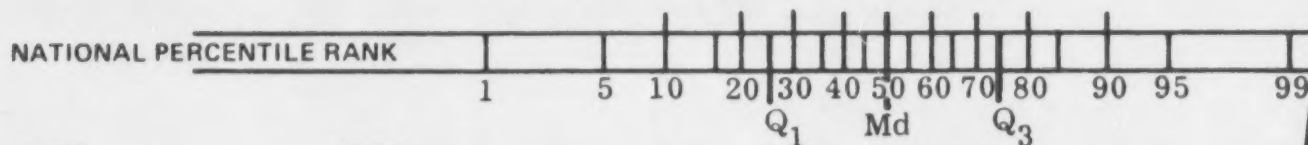
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57

77

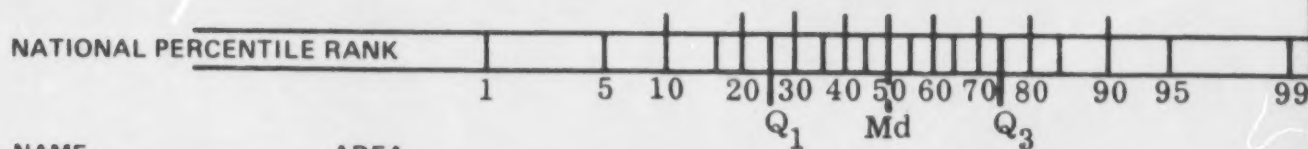
91

**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT EACH SCHOOL'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
GRADE 7 COMPOSITE**



SCHOOL NAME	AREA			
ARGYLE JUNIOR	2	42	62	80
JOHN T. BAKER JUNIOR	5	24	56	74
BENJAMIN BANNEKER JUNIOR	4	44	64	78
COL. JOSEPH BELT JUNIOR	4	22	44	66
EDWIN W. BROOME MIDDLE	3	19	40	60
CABIN JOHN JUNIOR	3	52	76	87
EASTERN JUNIOR	2	22	54	76
WM. H. FARQUHAR MIDDLE	4	36	58	76
ROBERT FROST JUNIOR	3	52	72	87
GAITHERSBURG JUNIOR	5	24	52	76
HERBERT HOOVER JUNIOR	3	60	78	89
KENSINGTON JUNIOR	1	26	52	81
FRANCIS SCOTT KEY JUNIOR	2	30	60	81
COL. E. BROOKE LEE JUNIOR	2	46	66	84
LELAND JUNIOR	1	54	74	90

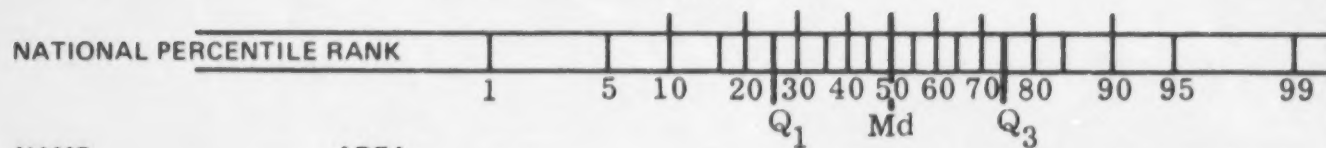
**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT EACH SCHOOL'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
GRADE 7 COMPOSITE (Continued)**



SCHOOL NAME	AREA			
MONTGOMERY VILLAGE JUNIOR	5	42	66	83
NEWPORT JUNIOR	1	30	50	68
NORTH BETHESDA JUNIOR	1	50	72	90
PARKLAND JUNIOR	4	36	58	78
POOLESVILLE HIGH	5	17	48	70
THOMAS W. PYLE JUNIOR	1	58	76	90
RANDOLPH JUNIOR	4	22	50	72
REDLAND JUNIOR	4	40	68	86
RIDGEVIEW JUNIOR	5	26	52	74
SLIGO JUNIOR	2	28	52	72
TAKOMA PARK JUNIOR	2	13	34	54
TILDEN JUNIOR	3	60	76	91
JULIUS WEST JUNIOR	3	36	62	83
WESTERN JUNIOR	1	56	78	91
WHITE OAK JUNIOR	2	44	64	83

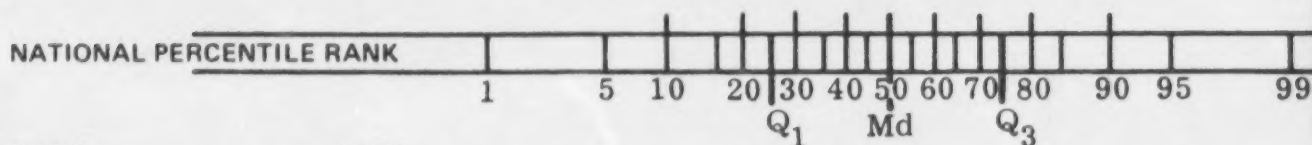
363

**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT EACH SCHOOL'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
GRADE 7 COMPOSITE (Continued)**



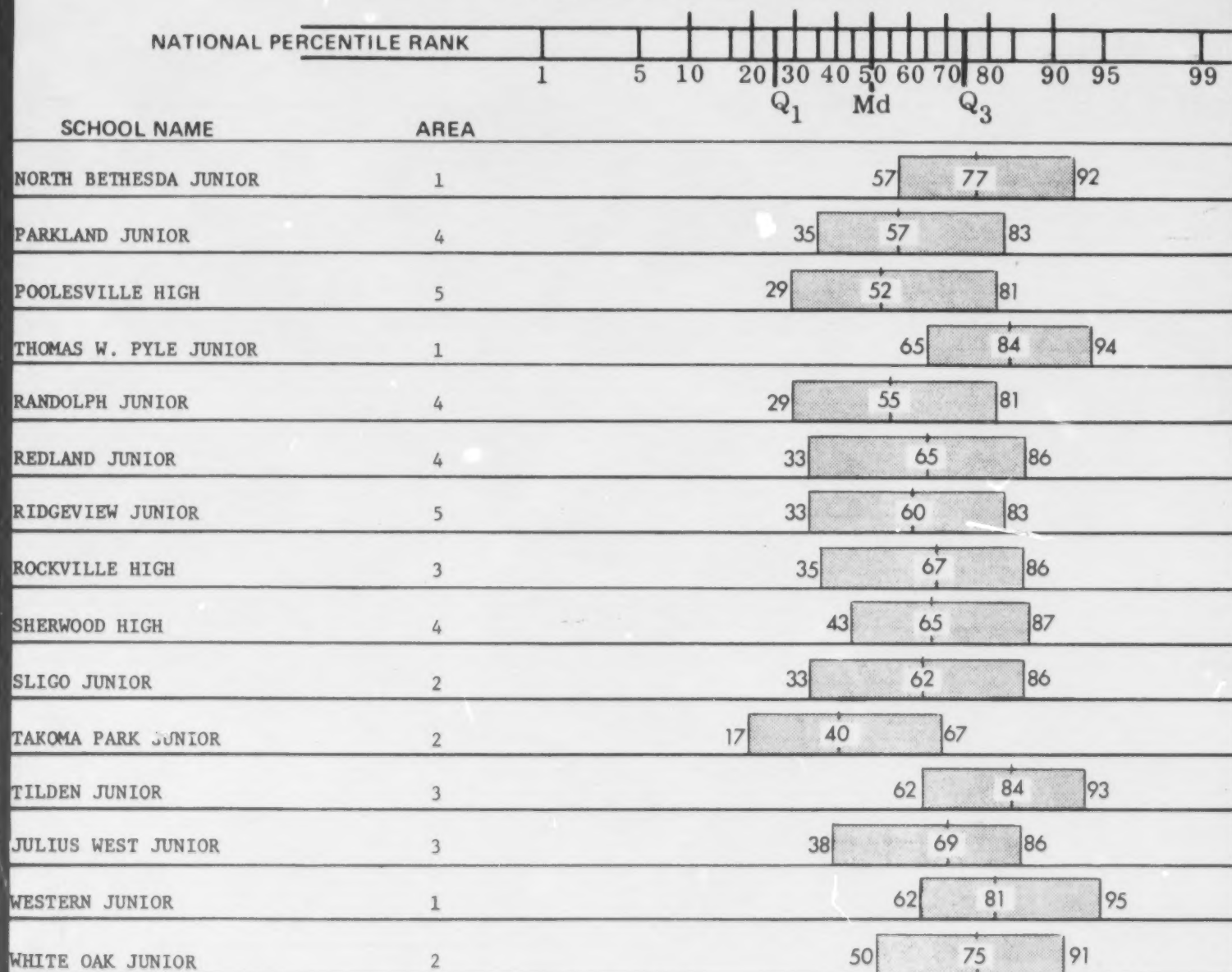
SCHOOL NAME	AREA	
ARLE B. WOOD JUNIOR	4	54 76 89

**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT EACH SCHOOL'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
GRADE 9 VERBAL**

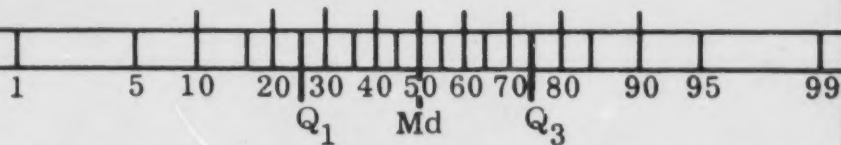


SCHOOL NAME	AREA			
ARGLYE JUNIOR	2	40	65	84
BENJAMIN BANNEKER JUNIOR	4	45	65	84
COL. JOSEPH BELT JUNIOR	4	25	50	75
EDWIN W. BROOME JUNIOR	3	27	50	75
CABIN JOHN JUNIOR	3	62	79	92
DAMASCUS HIGH	5	31	62	86
EASTERN JUNIOR	2	33	62	83
GAITHERSBURG JUNIOR	5	29	57	79
HERBERT HOOVER JUNIOR	3	55	81	93
KENSINGTON JUNIOR	1	35	75	92
FRANCIS SCOTT KEY JUNIOR	2	38	67	88
COL. E. BROOKE LEE JUNIOR	2	50	71	87
LELAND JUNIOR	1	65	86	95
MONTGOMERY VILLAGE JUNIOR	5	52	75	88
NEWPORT JUNIOR	1	31	60	81

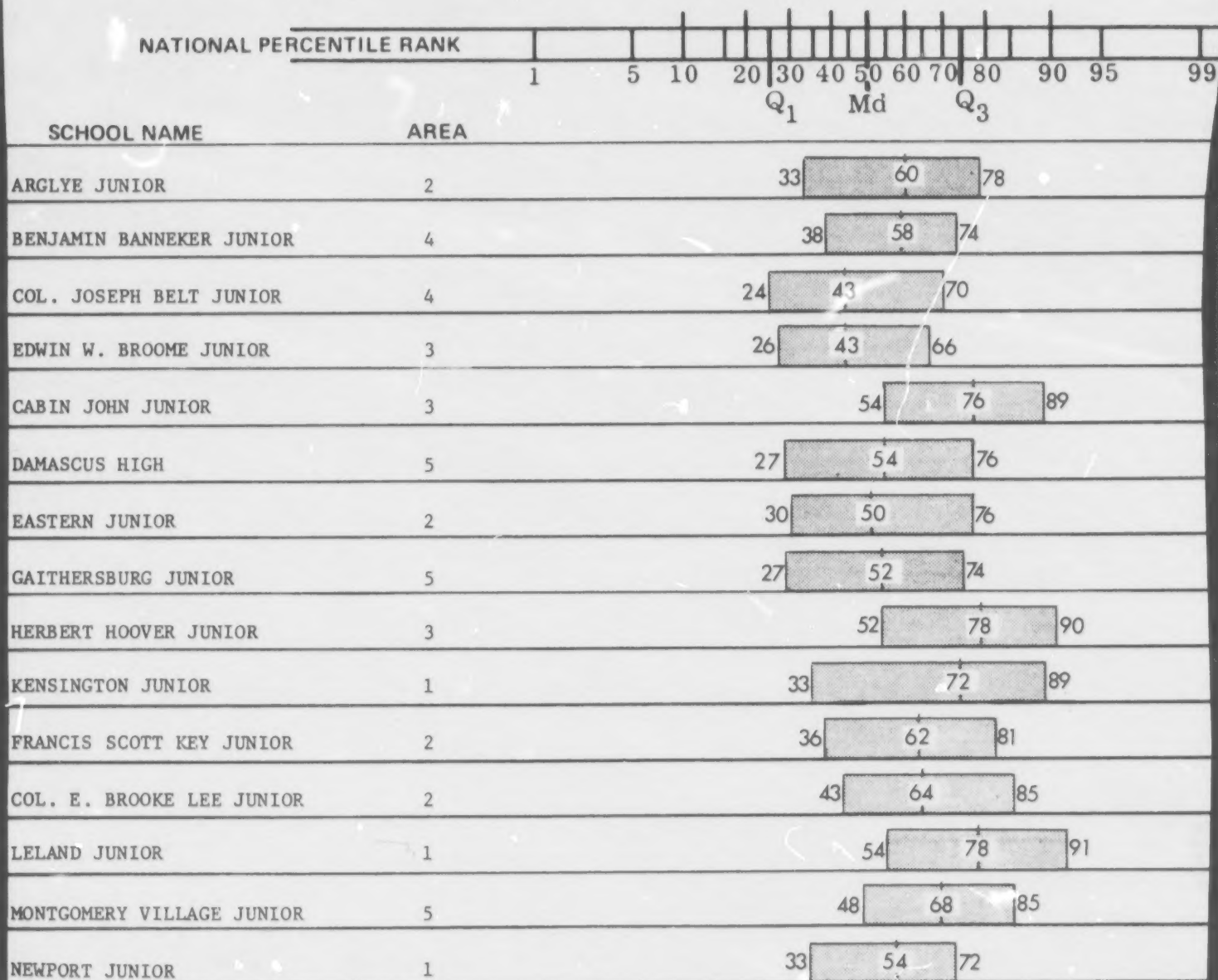
**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT EACH SCHOOL'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
GRADE 9 VERBAL (Continued)**



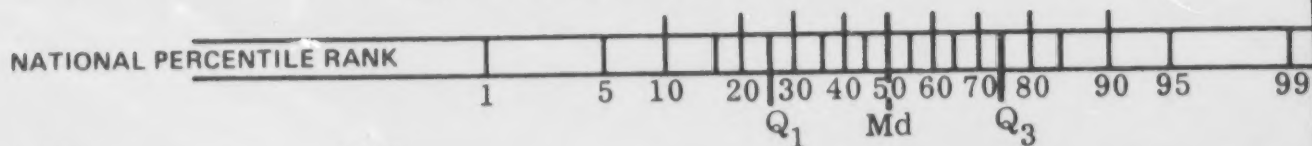
NATIONAL PERCENTILE RANK

367

**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT EACH SCHOOL'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
GRADE 9 COMPOSITE**

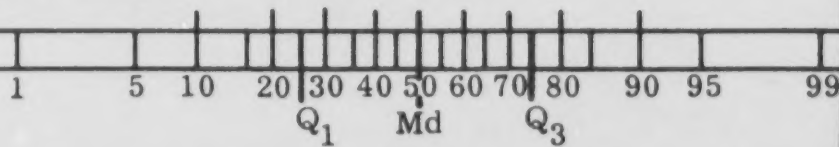


**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT EACH SCHOOL'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
GRADE 9 COMPOSITE (Continued)**

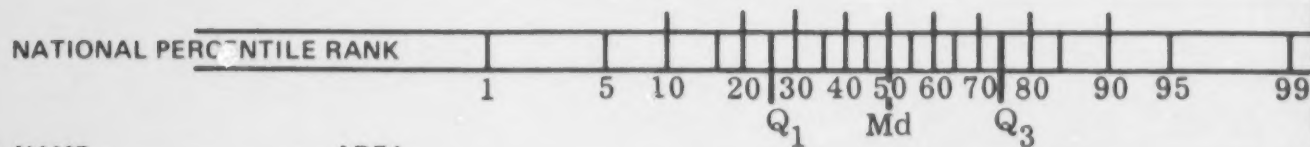


SCHOOL NAME	AREA			
NORTH BETHESDA JUNIOR	1	50	70	87
PARKLAND JUNIOR	4	31	54	76
POOLESVILLE HIGH	5	24	41	66
THOMAS W. PYLE JUNIOR	1	60	78	91
RANDOLPH JUNIOR	4	35	56	81
REDLAND JUNIOR	4	39	60	81
RIDGEVIEW JUNIOR	5	22	50	74
ROCKVILLE HIGH	3	28	54	78
SHERWOOD HIGH	4	28	50	72
SLIGO JUNIOR	2	30	58	78
TAKOMA PARK JUNIOR	2	8	33	56
TILDEN JUNIOR	3	58	78	90
JULIUS WEST JUNIOR	3	38	62	83
WESTERN JUNIOR	1	56	74	91
WHITE OAK JUNIOR	2	369	47	68 85

NATIONAL PERCENTILE RANK

370

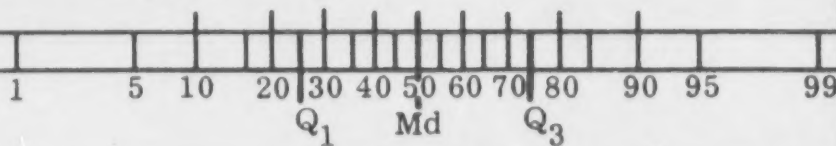
**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT EACH SCHOOL'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
GRADE 11 VERBAL**



SCHOOL NAME	AREA			
BETHESDA-CHEVY CHASE HIGH	1	55	81	95
MONTGOMERY BLAIR HIGH	2	23	50	81
WINSTON CHURCHILL HIGH	3	60	79	92
DAMASCUS HIGH	5	40	65	86
ALBERT EINSTEIN HIGH	1	33	57	81
GAITHERSBURG HIGH	5	40	67	88
WALTER JOHNSON HIGH	1	55	81	94
JOHN F. KENNEDY HIGH	2	43	65	87
COL. ZADOK MAGRUDER HIGH	4	45	73	87
RICHARD MONTGOMERY HIGH	3	43	69	88
NORTHWOOD HIGH	2	43	62	86
PAINT BRANCH HIGH	4	40	65	84
ROBERT E. PEARY HIGH	4	43	69	86
POOLESVILLE HIGH	5	27	55	79
ROCKVILLE HIGH	3	35	62	84

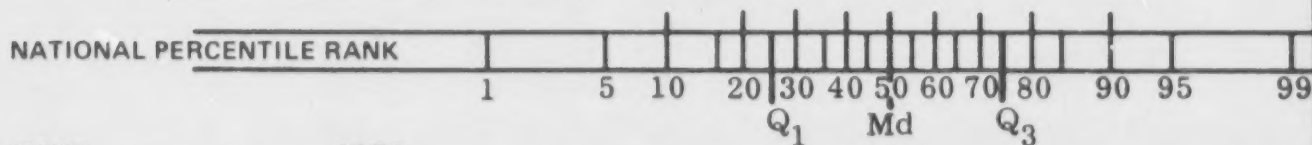
371

NATIONAL PERCENTILE RANK



SCHOOL NAME	AREA	1	3
SENECA VALLEY HIGH	5	43	87
SHERWOOD HIGH	4	33	83
SPRINGBROOK HIGH	2	55	91
WHEATON HIGH	4	33	81
WALT WHITMAN HIGH	1	65	96
CHARLES W. WOODWARD	3	60	92
THOMAS S. WOOTTON HIGH	3	57	92

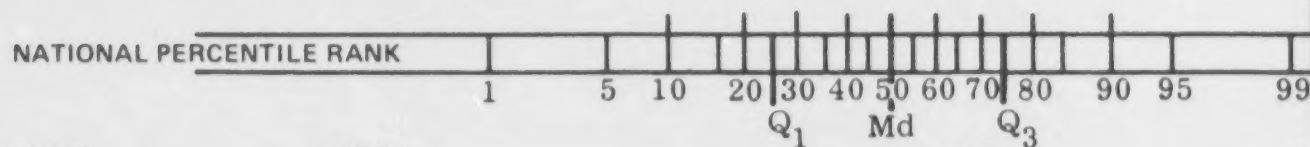
**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT EACH SCHOOL'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
GRADE 11 COMPOSITE**



SCHOOL NAME	AREA			
BETHESDA-CHEVY CHASE HIGH	1	52	77	91
MONTGOMERY BLAIR HIGH	2	18	39	74
WINSTON CHURCHILL HIGH	3	52	74	91
DAMASCUS HIGH	5	29	52	77
ALBERT EINSTEIN HIGH	1	29	52	74
GAITHERSBURG HIGH	5	31	59	82
WALTER JOHNSON HIGH	1	47	71	91
JOHN F. KENNEDY HIGH	2	36	55	82
COL. ZADOK MAGRUDER HIGH	4	39	63	84
RICHARD MONTGOMERY HIGH	3	23	55	84
NORTHWOOD HIGH	2	31	55	82
PAINT BRANCH HIGH	4	31	59	82
ROBERT F. PEARY HIGH	4	36	59	82
POOLESVILLE HIGH	5	14	43	59
ROCKVILLE HIGH	3	29	47	77

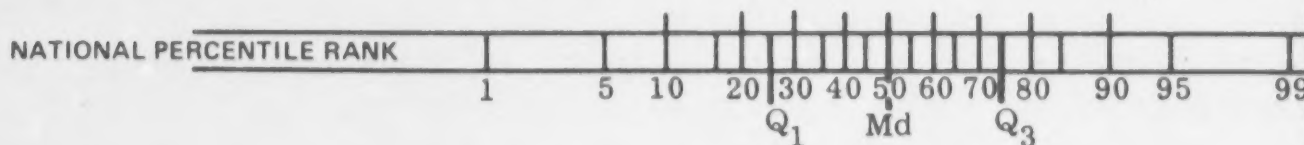
373

**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT EACH SCHOOL'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
GRADE 11 COMPOSITE (Continued)**



SCHOOL NAME	AREA			
SENECA VALLEY HIGH	5	36	59	82
SHERWOOD HIGH	4	21	47	74
SPRINGBROOK	2	43	67	87
WHEATON	4	23	47	74
WALT WHITMAN	1	59	82	93
CHARLES W. WOODWARD	3	55	74	91
THOMAS S. WOCTTON HIGH	3	47	74	89

**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT THE COUNTY'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
VERBAL**



GRADE 3 COUNTY

52 79 93

GRADE 5 COUNTY

50 75 92

GRADE 7 COUNTY

43 67 87

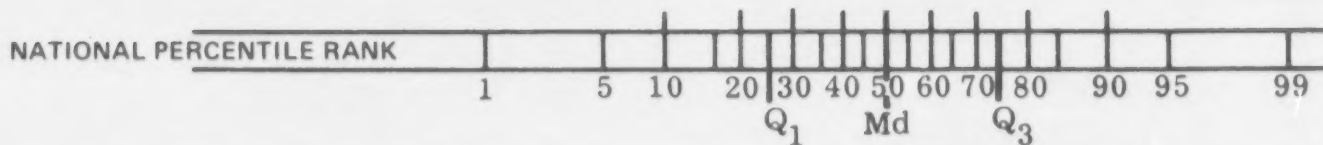
GRADE 9 COUNTY

43 69 88

GRADE 11 COUNTY

43 71 89

**NATIONAL PERCENTILE RANK FOR THE STUDENT SCORING AT THE COUNTY'S
FIRST QUARTILE (Q1), MEDIAN, AND THIRD QUARTILE (Q3) —
COMPOSITE**



GRADE 3 COUNTY

55 79 91

GRADE 5 COUNTY

46 72 89

GRADE 7 COUNTY

38 62 81

GRADE 9 COUNTY

38 62 83

GRADE 11 COUNTY

36 63 84

2-C. LONGITUDINAL TEST RESULTS BY SCHOOL

Rationale, Data, and Data Analysis

Rationale

A confounding factor in the analysis of school test data is that some students have been in a given school for only a short period of time. The inclusion of the test scores of these students in the data for that school can lead to incorrect impressions about the success of the school's instructional program. This is especially true if a substantial proportion of the students in a given school are new. A better indication of the quality of a school's program can be provided by the test scores of students who have been in the same school for at least two years, the time between administration of systemwide tests to individual students. These school longitudinal data are provided in this section as well as some county summary data. They can provide answers to the following questions:

1. Do students who were tested in the same school in both 1976 and 1978 score higher than students who were tested in that school for only one year? How much effect on the overall school results did the second group have?
2. How do the score patterns of the longitudinal groups compare to the county pattern for longitudinal groups?

Data

The tables that follow contain mean test scores for students who were tested in the same school in both 1976 and 1978 (longitudinal groups). Also shown are the mean scores of students tested in each school in only one of the two years (non-longitudinal groups). The results reported are for 1976 Grade 3 and 1978 Grade 5 in elementary schools and 1976 Grade 7 and 1978 Grade 9 in junior high schools. Schools are listed in alphabetical order with the elementary schools starting on page 330 and the junior high schools starting on page 338.

Two mean scores are reported for each school for each year: the standard age score (SAS) for the CAT Verbal and the grade equivalent (GE) for the ITBS Composite. The Composite is presented because it provides a straightforward summary of the test results of a school. While the evidence presented in Chapter 3 of this report raises questions as to whether the CAT Verbal really measures "ability" independently of achievement, that score is included for those who wish to compare it to the Composite. Limiting the data to two scores makes interpretation easy and still provides good information for determining the trend of scores in a school.

Scores of groups with fewer than 10 members were not included in these tables because the mean scores of groups that small are liable to fluctuate considerably as a result of one or two exceptionally high or low scores. The better statistic to use for these small groups would be the median. However, means are used here to be consistent with the data reported in Section 2-A. If the

longitudinal group for a school has fewer than 10 students, no data will be reported for that school.

Countywide results are reported at the end of the tables for elementary schools and for junior high schools. The first set of results is for all students tested in the same school both years. The second set of results is for students tested somewhere in the MCPS each year. These results provide a basis of comparison for each school. These comparisons are discussed in the sections that follow.

Analysis

No formal statistical analyses have been performed. The data for each school should be reviewed separately to answer the questions presented in the Rationale section.

Results

Comparison: Longitudinal/Non-longitudinal Groups (Question 1)

The scores for the two groups are reported next to one another within the same year. It can be clearly seen which group scored higher in each year. The effect of the Non-longitudinal group (NL) on the total school result is related to the difference between the scores of the two groups. Also to be considered is the relative size of the groups. If the NL-group has as many students as the Longitudinal group (L), its effect on the school data will be greater than if it has only 25 percent as many students.

Score Trends for School and County (Question 2)

The trend of scores within each school should be compared to countywide trends to help determine how well the L-group within a school performed. This comparison uses county performance as a baseline.

Countywide there was a slight upward trend in the scores of the L-group on the CAT Verbal in the Grades 3-5 and 7-9 comparisons and on the ITBS Composite in the Grades 7-9 comparisons. A school with a similar trend has data which can be considered "average" for the county. There was a countywide decline in L-group scores on the ITBS Composite in the Grades 3-5 comparison. Thus, a school with the same trend can also be considered "average" for the county.

SCHOOL RESULTS FOR LONGITUDINAL (L) AND NON-LONGITUDINAL (NL) GROUPS
ELEMENTARY SCHOOLS
(Scores reported are the standard age score (SAS), grade equivalent (GE),
and national percentile rank (PR), of the student with the mean score)

School	Grade	Number Taking Composite		CAT Verbal				ITES Composite			
		L	NL	Longi-tudinal		Non-Longi-tudinal		Longi-tudinal		Non-Longi-tudinal	
				SAS	PR	SAS	PR	GE	PR	GE	PR
Arcola	3	6	13	-	-	-	-	-	-	-	-
	5	6	5	-	-	-	-	-	-	-	-
Ashburton	3	26	8	106.0	65	-	-	4.0	63	-	-
	5	26	13	112.5	78	111.5	76	6.6	73	6.4	70
Aspen Hill	3	6	55	-	-	-	-	-	-	-	-
	5	6	3	-	-	-	-	-	-	-	-
Ayrlawn	3	13	7	116.0	84	116.5	85	4.8	84	4.6	79
	5	13	8	116.0	84	-	-	6.9	80	-	-
Bannockburn	3	33	10	116.0	84	125.0	94	4.9	85	5.2	91
	5	33	17	118.0	87	120.0	89	7.3	87	7.2	86
Lucy Barnsley	3	63	14	120.0	89	112.5	78	4.9	86	4.5	75
	5	63	6	119.0	88	-	-	7.2	86	-	-
Bel Pre	3	39	18	105.3	63	108.5	70	4.0	60	4.6	78
	5	39	15	111.5	76	103.3	58	5.9	56	5.6	48
Bells Mill	3	51	16	110.0	73	116.0	84	4.6	79	4.8	84
	5	51	24	114.0	81	112.5	78	7.0	82	7.1	84
Belmont	3	56	27	107.0	67	111.5	76	4.0	63	4.2	69
	5	56	18	111.0	75	103.0	57	6.4	69	5.7	50
Bethesda	3	38	32	119.0	88	111.5	76	4.6	78	4.3	70
	5	38	9	120.0	89	-	-	7.3	87	-	-
Beverly Farms	3	72	11	118.0	87	122.0	92	4.8	82	4.7	81
	5	72	12	117.0	86	109.5	72	7.0	81	6.4	70
Bradley	3	40	13	119.0	88	121.0	91	5.1	90	5.4	94
	5	40	12	118.0	87	114.5	82	7.4	89	7.1	84
Broad Acres	3	23	18	108.0	69	106.0	65	4.4	73	4.2	68
	5	23	7	105.3	63	-	-	5.8	54	-	-
Brookhaven	3	54	15	108.5	70	105.3	63	4.4	74	3.9	59
	5	54	17	111.5	76	106.0	65	6.6	73	5.1	52
Brookmont	3	32	14	121.0	91	109.5	72	5.0	88	4.4	73
	5	32	14	120.5	90	113.5	80	7.3	88	6.6	73
Brookview	3	11	14	100.0	50	105.3	63	3.7	53	3.8	56
	5	11	37	108.0	69	98.0	45	5.5	46	4.7	24
Brown Station	3	32	35	104.0	60	105.5	63	4.1	64	4.4	73
	5	32	36	107.0	67	101.7	54	6.4	70	5.7	50

SCHOOL RESULTS FOR LONGITUDINAL (L) AND NON-LONGITUDINAL (NL) GROUPS

ELEMENTARY SCHOOLS

(Scores reported are the standard age score (SAS), grade equivalent (GE),
and national percentile rank (PR), of the student with the mean score)

School	Grade	Number Taking Composite		CAT Verbal				ITBS Composite			
		L	NL	Longi-tudinal		Non-Longi-tudinal		Longi-tudinal		Non-Longi-tudinal	
				SAS	PR	SAS	PR	GE	PR	GE	PR
Burning Tree	3	16	7	120.0	89	-	-	4.9	86	-	-
	5	16	80	120.0	89	121.0	91	7.2	86	7.6	91
Burtonsville	3	31	13	109.0	71	111.5	76	4.5	75	4.3	70
	5	31	11	109.5	72	108.5	70	6.1	62	6.4	69
Candlewood	3	65	18	116.5	85	110.0	73	5.1	89	4.7	81
	5	65	16	116.5	85	109.5	72	7.1	83	6.3	68
Cannon Road	3	59	21	113.0	79	110.0	73	4.9	85	4.6	78
	5	59	12	116.0	84	98.3	46	6.8	77	5.3	42
Carderock Springs	3	41	16	118.0	87	119.0	88	4.9	85	4.6	79
	5	41	19	116.0	84	114.5	82	7.1	83	7.0	82
Cashell	3	56	13	111.5	76	111.5	76	4.8	83	4.5	76
	5	56	22	108.5	70	114.0	81	6.4	69	6.6	73
Cedar Grove	3	39	7	110.0	73	-	-	4.6	79	-	-
	5	39	18	113.0	79	114.0	81	6.6	73	6.3	68
Chevy Chase	3	43	23	120.5	90	120.5	90	4.8	83	4.7	81
	5	43	56	120.5	90	105.0	62	7.2	85	5.9	55
Clarksburg	3	24	13	100.0	50	90.0	27	3.6	50	2.9	23
	5	24	8	104.5	61	-	-	5.5	47	-	-
Cloverly	3	53	18	111.0	75	102.0	55	4.4	74	4.0	62
	5	53	14	113.0	79	116.0	84	6.9	79	7.2	86
Cold Spring	3	79	24	116.5	85	116.0	84	4.8	83	4.8	83
	5	79	19	117.0	86	120.0	89	7.1	84	7.2	85
College Gardens	3	54	32	117.0	86	110.0	73	5.0	87	4.9	85
	5	54	26	116.0	84	107.0	67	7.0	82	6.2	63
Congressional	3	18	23	100.5	51	102.0	55	4.5	76	4.3	70
	5	18	12	103.0	57	110.0	73	5.8	53	6.2	63
Connecticut Park	3	40	21	108.0	69	107.0	67	3.9	59	3.9	57
	5	40	35	109.5	72	105.5	62	6.1	62	6.0	59
Cresthaven	3	35	8	114.5	82	-	-	4.5	75	-	-
	5	35	26	117.0	86	113.5	80	6.9	80	6.6	73
Damascus	3	67	9	110.0	73	-	-	4.6	78	-	-
	5	67	15	109.0	71	105.5	63	6.6	73	6.0	59

SCHOOL RESULTS FOR LONGITUDINAL (L) AND NON-LONGITUDINAL (NL) GROUPS
ELEMENTARY SCHOOLS
(Scores reported are the standard age score (SAS), grade equivalent (GE),
and national percentile rank (PR), of the student with the mean score)

School	Grade	Number Taking Composite		CAT Verbal				ITBS Composite			
		L	NL	Longi-tudinal		Non-Longi-tudinal		Longi-tudinal		Non-Longi-tudinal	
				SAS	PR	SAS	PR	GE	PR	GE	PR
Darnestown	3	30	17	114.5	82	100.0	50	4.6	78	3.6	50
	5	30	20	116.5	85	118.0	87	6.9	79	7.0	82
Diamond	3	53	16	113.0	79	111.5	76	4.9	85	4.7	80
	5	53	37	115.0	83	112.0	77	6.8	78	6.2	63
DuFief	3	31	13	112.0	77	113.5	80	4.3	71	4.3	71
	5	31	29	113.5	80	108.0	69	6.4	69	5.7	51
English Manor	3	41	15	112.0	77	112.5	78	4.5	75	4.0	63
	5	41	11	111.5	76	100.0	50	6.5	72	5.6	48
Fairland	3	62	30	113.0	79	112.0	77	4.3	70	4.1	66
	5	62	17	113.5	80	106.0	65	6.5	72	6.2	64
Fallsmead	3	44	19	118.0	87	108.0	69	4.9	85	4.4	72
	5	44	19	114.5	82	117.0	86	6.9	80	7.0	81
Farmland	3	53	6	120.0	89	-	-	5.2	91	-	-
	5	53	11	119.0	88	115.0	83	7.1	84	6.9	80
Fields Road	3	25	62	103.7	59	98.3	46	3.5	46	3.2	35
	5	25	27	104.5	61	103.3	58	5.5	46	5.3	41
Flower Valley	3	76	16	114.5	82	109.5	72	4.6	79	3.8	54
	5	76	25	114.5	82	118.0	87	6.6	74	6.8	77
Forest Grove	3	18	11	108.5	70	107.5	68	4.0	62	4.0	62
	5	18	13	109.5	72	112.0	77	6.1	62	6.3	68
Forest Knolls	3	7	6	-	-	-	-	-	-	-	-
	5	7	21	-	-	-	-	-	-	-	-
Four Corners	3	32	15	109.0	71	114.5	82	4.4	74	4.4	73
	5	32	25	111.0	75	106.5	66	6.5	71	6.3	67
Fox Chapel	3	35	15	98.7	47	103.0	57	3.3	36	3.9	57
	5	35	31	98.7	47	101.0	52	5.3	41	5.8	54
Gaithersburg	3	38	47	93.5	34	98.0	45	3.0	27	3.4	43
	5	38	39	96.0	40	103.3	58	4.8	27	5.7	51
Galway	3	63	21	114.5	82	105.3	63	4.6	79	4.0	63
	5	63	14	114.0	81	109.5	72	7.1	83	6.6	73
Garrett Park	3	20	14	120.5	90	110.0	73	4.8	82	4.0	61
	5	20	5	120.5	90	-	-	7.1	83	-	-

351

SCHOOL RESULTS FOR LONGITUDINAL (L) AND NON-LONGITUDINAL (NL) GROUPS

ELEMENTARY SCHOOLS

(Scores reported are the standard age score (SAS), grade equivalent (GE), and national percentile rank (PR), of the student with the mean score)

School	Grade	Number Taking Composite		CAT Verbal				ITBS Composite			
		L	NL	Longi-tudinal		Non-Longi-tudinal		Longi-tudinal		Non-Longi-tudinal	
				SAS	PR	SAS	PR	GE	PR	GE	PR
Georgetown Hill	3	54	13	114.0	81	110.5	74	4.5	75	4.0	61
	5	54	16	116.0	84	116.0	84	6.9	79	6.9	80
Georgian Forest	3	25	16	110.0	73	102.0	55	4.3	70	3.8	56
	5	25	17	111.5	76	112.0	77	6.9	79	7.0	82
Germantown	3	47	16	111.5	76	103.3	58	4.4	73	4.0	63
	5	47	23	110.5	74	109.0	71	6.6	73	6.3	67
Glen Haven	3	33	15	113.0	79	110.5	74	4.4	73	4.4	73
	5	33	28	114.5	82	105.3	63	6.7	76	5.9	57
Glenallen	3	39	12	109.5	72	101.7	54	4.0	63	3.5	44
	5	39	22	112.0	77	101.3	53	6.3	68	5.3	41
Greenwood	3	73	11	113.0	79	98.7	47	4.4	74	3.7	53
	5	73	18	114.0	81	107.5	68	6.5	71	5.9	57
Grosvenor	3	29	14	114.5	82	110.0	73	4.6	79	4.3	70
	5	29	12	114.0	81	119.0	88	6.7	76	7.0	82
Harmony Hills	3	35	13	109.5	72	108.5	70	4.3	71	4.3	70
	5	35	23	111.5	76	102.5	56	6.9	79	6.1	61
Highland	3	44	20	100.5	51	110.0	73	3.9	59	3.9	58
	5	44	26	105.3	63	98.3	46	6.6	73	5.3	41
Highland View	3	34	10	113.0	79	103.0	57	4.4	74	4.0	61
	5	34	23	111.5	76	107.0	67	6.9	79	6.6	73
Holiday Park	3	25	24	101.7	54	103.3	58	3.6	48	3.4	40
	5	25	7	102.5	56	-	-	5.3	41	-	-
Hungerford Park	3	27	10	115.0	83	102.0	55	4.8	82	3.8	56
	5	27	39	114.5	82	106.5	66	6.9	80	6.2	63
Jackson Road	3	39	9	119.0	88	-	-	4.8	83	-	-
	5	39	51	116.0	84	108.0	69	7.1	84	6.3	68
Kemp Mill	3	36	3	113.0	79	-	-	4.9	86	-	-
	5	36	26	111.5	76	112.0	77	6.6	73	6.4	69
Kensington	3	16	15	109.0	71	109.0	71	4.3	70	4.3	71
	5	16	2	106.5	66	-	-	6.2	65	-	-
Lake Normandy	3	46	14	122.0	92	114.5	82	5.1	89	4.4	74
	5	46	20	124.0	93	119.0	88	7.4	89	7.1	83

SCHOOL RESULTS FOR LONGITUDINAL (L) AND NON-LONGITUDINAL (NL) GROUPS

ELEMENTARY SCHOOLS

(Scores reported are the standard age score (SAS), grade equivalent (GE),
and national percentile rank (PR), of the student with the mean score)

School	Grade	Number Taking Composite		CAT Verbal				ITBS Composite			
		L	NL	Longi-tudinal		Non-Longi-tudinal		Longi-tudinal		Non-Longi-tudinal	
				SAS	PR	SAS	PR	GE	PR	GE	PR
Lakewood	3	44	13	115.0	83	119.0	88	4.4	73	5.0	88
	5	44	27	114.5	82	102.0	55	6.8	77	4.9	30
Larchmont	3	23	14	111.5	76	105.3	63	4.5	76	3.7	52
	5	23	24	114.0	81	96.7	42	6.5	72	5.0	32
Laytonsville	3	63	24	110.0	73	96.0	40	4.3	71	3.5	45
	5	63	31	110.0	73	109.5	72	6.3	68	6.3	58
Lone Oak	3	26	36	105.3	63	109.0	71	4.0	63	4.2	69
	5	26	10	105.3	63	91.0	29	6.0	59	4.9	29
Luxmanor	3	24	12	114.5	82	115.0	83	4.9	85	4.9	86
	5	24	11	113.5	80	114.0	81	6.8	77	6.8	77
Lynnbrook	3	13	13	116.0	84	115.0	83	5.3	93	5.2	91
	5	13	8	115.0	83	-	-	7.1	83	-	-
Meadow Hall	3	29	14	113.5	80	113.5	80	4.7	81	4.8	84
	5	29	27	114.5	82	111.5	76	6.6	73	6.4	70
Mill Creek Towne	3	74	36	111.5	76	110.0	73	4.4	73	4.1	66
	5	74	27	111.0	75	105.5	63	6.1	61	5.8	54
Monocacy	3	26	7	104.0	60	-	-	3.7	52	-	-
	5	26	7	106.5	66	-	-	5.7	51	-	-
Montrose	3	12	13	112.5	78	101.7	54	4.8	82	3.7	51
	5	12	12	107.0	67	98.7	47	6.4	69	5.2	38
North Chevy Chase	3	24	14	116.0	84	113.5	80	4.9	85	4.5	76
	5	24	17	117.0	86	108.5	70	7.6	91	6.7	75
North Lake	3	41	17	113.5	80	116.0	84	4.4	74	4.7	80
	5	41	14	114.5	82	108.0	69	6.4	70	6.2	63
Oak View	3	24	19	110.5	74	103.5	58	4.3	70	3.7	53
	5	24	51	110.0	73	102.5	56	6.1	62	5.6	48
Olney	3	40	24	110.0	73	107.0	67	4.3	70	4.1	66
	5	40	19	109.0	71	112.0	77	6.3	66	6.5	71
Page	3	38	11	109.5	72	105.0	62	4.1	65	3.6	49
	5	38	9	110.5	74	-	-	6.7	76	-	-
Parkwood	3	31	11	114.5	82	114.5	82	4.5	75	4.4	73
	5	31	10	113.0	79	104.5	61	6.8	77	5.7	51

353

SCHOOL RESULTS FOR LONGITUDINAL (L) AND NON-LONGITUDINAL (NL) GROUPS

ELEMENTARY SCHOOLS

(Scores reported are the standard age score (SAS), grade equivalent (GE), and national percentile rank (PR), of the student with the mean score)

School	Grade	Number Taking Composite		CAT Verbal				ITBS Composite			
		L	NL	Longitudinal		Non-Longitudinal		Longitudinal		Non-Longitudinal	
				SAS	PR	SAS	PR	GE	PR	GE	PR
Pine Crest	3	20	9	119.0	88	-	-	4.8	84	-	-
	5	20	31	118.0	87	106.5	66	7.0	82	5.8	53
Pleasant View	3	23	16	109.5	72	103.5	59	4.4	72	3.7	52
	5	23	10	109.0	71	83.0	14	6.2	63	4.2	13
Poolesville	3	58	21	108.5	70	108.5	70	4.1	65	4.0	62
	5	58	40	107.5	68	105.3	63	5.9	56	5.8	53
Potomac	3	65	20	118.0	87	113.0	79	5.1	90	4.8	82
	5	65	28	117.0	86	115.0	83	7.1	83	6.8	77
Radnor	3	19	23	122.0	92	114.0	81	4.9	85	4.5	75
	5	19	9	122.0	92	-	-	7.3	87	-	-
Ritchie Park	3	4	21	113.0	79	115.0	83	4.5	75	4.3	70
	5	41	23	115.0	83	110.0	73	6.9	79	7.2	85
Rock Creek Palisades	3	35	8	113.0	79	-	-	4.3	71	-	-
	5	35	15	114.5	82	105.3	63	6.5	71	5.5	47
Rock Creek Valley	3	54	20	111.5	76	104.0	60	4.5	77	4.1	65
	5	54	53	113.5	80	108.5	70	6.8	77	6.2	63
Rocking Horse Road	3	32	25	114.5	82	107.5	67	4.3	70	3.9	58
	5	32	20	108.5	70	103.0	57	6.5	71	5.7	50
Rollingwood	3	23	2	116.0	84	-	-	4.5	76	-	-
	5	23	13	116.0	84	113.5	80	6.8	77	6.6	73
Rosemont	3	16	11	111.5	76	94.3	36	4.9	86	3.9	59
	5	16	17	111.5	76	109.0	71	7.1	83	6.6	73
Saddlebrook	3	52	21	116.5	85	106.5	66	4.6	79	4.0	63
	5	52	17	116.5	85	114.5	82	7.0	82	6.8	78
Seven Locks	3	35	10	118.0	87	113.0	80	4.8	83	4.8	83
	5	35	17	120.0	89	107.5	68	7.2	85	6.4	70
Sherwood	3	53	15	108.5	70	98.7	47	4.2	67	3.6	49
	5	53	33	108.5	69	104.5	60	6.2	63	5.5	47
Somerset	3	36	16	117.0	86	116.0	84	5.0	87	4.9	86
	5	36	46	119.0	88	113.0	79	7.3	88	6.7	76
South Lake	3	29	33	110.5	74	106.5	66	4.3	70	4.0	63
	5	29	37	111.0	75	111.0	75	6.3	67	6.0	59

SCHOOL RESULTS FOR LONGITUDINAL (L) AND NON-LONGITUDINAL (NL) GROUPS

ELEMENTARY SCHOOLS

(Scores reported are the standard age score (SAS), grade equivalent (GE), and national percentile rank (PR), of the student with the mean score)

School	Grade	Number Taking Composite		CAT Verbal				ITBS Composite			
		L	NL	Longi-tudinal		Non-Longi-tudinal		Longi-tudinal		Non-Longi-tudinal	
				SAS	PR	SAS	PR	GE	PR	GE	PR
Stedwick	3	53	27	117.0	86	108.0	69	4.8	84	4.3	70
	5	53	42	119.0	88	120.0	89	7.0	82	7.1	83
Stonegate	3	49	16	108.5	70	99.5	49	4.4	74	3.7	53
	5	49	13	113.5	80	100.5	51	6.4	70	5.0	32
Strathmore	3	32	30	110.0	73	99.5	49	4.0	63	3.3	38
	5	32	14	112.5	78	107.0	67	6.3	68	5.7	50
Summit Hall	3	38	29	111.0	75	105.3	63	4.3	70	3.9	58
	5	38	27	111.0	75	105.0	62	6.2	64	5.5	46
Taylor	3	19	6	96.0	40	-	-	3.0	27	-	-
	5	19	-	96.0	40	-	-	4.8	27	-	-
Travilah	3	24	14	108.5	70	101.3	53	4.0	63	4.0	61
	5	24	26	105.0	62	108.0	69	5.9	55	6.0	58
Tuckerman	3	31	16	120.0	89	103.7	59	4.8	82	3.7	51
	5	31	-	121.0	91	-	-	7.3	87	-	-
Twinbrook	3	52	23	104.0	60	98.7	47	3.7	51	3.3	39
	5	52	24	104.0	60	105.3	63	5.4	43	6.0	60
Viers Mill	3	46	22	94.7	37	98.3	46	3.2	32	3.5	45
	5	46	11	100.5	51	104.5	61	5.5	47	6.0	60
Washington Grove	3	45	29	108.5	70	98.0	45	4.0	63	5.3	41
	5	45	27	108.5	70	108.5	70	5.9	56	5.7	51
Watkins Mill	3	37	33	114.0	81	108.5	70	4.8	82	4.2	68
	5	37	39	113.0	79	103.3	58	6.6	73	5.9	55
Wayside	3	74	20	116.0	84	113.5	80	4.7	81	4.2	69
	5	74	16	114.5	82	117.0	86	6.8	79	7.0	81
Weller Road	3	45	16	103.7	59	94.3	36	4.0	60	3.1	29
	5	45	53	109.0	71	101.7	54	5.9	57	5.3	40
West Rockville	3	25	23	106.0	65	107.5	68	3.9	59	3.9	59
	5	25	11	104.5	61	107.5	68	5.9	56	6.2	63
Westbrook	3	32	11	115.0	83	110.5	74	4.8	82	4.3	71
	5	32	17	121.0	91	115.0	83	6.1	61	6.6	73
Westover	3	46	10	116.5	85	113.5	80	5.1	89	4.8	83
	5	46	37	118.0	87	105.3	63	6.9	79	5.7	52

385

ELEMENTARY SCHOOLS

[illegible]

SCHOOL RESULTS FOR LONGITUDINAL (L) AND NON-LONGITUDINAL (NL) GROUPS

JUNIOR HIGHS

(Scores reported are the standard age score (SAS), grade equivalent (GE), and national percentile rank (PR), of the student with the mean score)

School	Grade	Number Taking Composite		CAT Verbal				ITBS Composite			
		L	NL	Longitudinal		Non-Longitudinal		Longitudinal		Non-Longitudinal	
				SAS	PR	SAS	PR	GE	PR	GE	PR
Argyle	7	219	86	105.3	63	100.0	50	8.1	60	7.3	43
	9	219	70	107.0	67	99.0	48	9.9	62	8.8	40
Banneker	7	236	61	105.7	64	106.0	65	8.0	58	7.7	51
	9	236	53	107.5	68	105.3	63	9.9	61	9.2	48
Belt	7	206	57	102.0	55	96.0	40	7.6	49	6.6	29
	9	206	76	101.7	54	98.0	45	9.2	48	8.6	37
Broome	7	121	70	103.5	58	102.5	56	7.5	48	7.4	45
	9	121	36	103.5	58	94.7	37	9.2	48	8.3	33
Cabin John	7	186	69	111.0	75	110.5	74	8.6	70	8.6	70
	9	186	56	114.0	81	110.5	74	10.5	73	10.2	68
Eastern	7	150	82	106.0	65	101.7	54	8.0	57	7.4	46
	9	150	63	108.0	69	96.7	42	9.8	60	8.6	37
Gaithersburg	7	199	88	103.7	59	97.0	43	7.6	50	6.6	30
	9	199	63	103.7	59	100.0	50	9.3	50	9.1	46
Hoover	7	256	41	113.0	79	105.3	63	8.9	75	8.2	62
	9	256	50	114.5	82	103.0	57	10.6	76	9.4	51
Kensington	7	140	62	112.0	77	108.5	70	8.8	74	8.3	63
	9	140	73	114.0	81	99.0	48	10.6	75	8.5	36
Key	7	153	51	108.5	70	100.0	50	8.5	68	7.4	46
	9	153	47	110.0	73	97.5	44	10.2	68	8.4	35
Lee	7	189	49	108.5	70	96.3	41	8.3	63	6.7	31
	9	189	43	110.5	74	105.3	63	10.1	66	9.4	51
Leland	7	145	38	116.0	84	113.5	80	9.1	79	8.9	76
	9	145	91	117.0	86	113.0	79	10.9	81	10.2	67
Montgomery Village	7	159	86	109.5	72	105.7	64	8.4	66	7.9	56
	9	159	89	111.0	75	107.5	68	10.2	68	10.0	63
Newport	7	137	35	104.0	60	98.0	45	7.9	55	7.1	40
	9	137	80	105.3	63	101.0	52	9.7	57	9.1	47
North Bethesda	7	242	72	113.0	79	105.7	64	8.9	75	8.1	60
	9	242	66	114.5	82	105.3	63	10.5	74	9.6	55

SCHOOL RESULTS FOR LONGITUDINAL (L) AND NON-LONGITUDINAL (NL) GROUPS

JUNIOR HIGHS

(Scores reported are the standard age score (SAS), grade equivalent (GE), and national percentile rank (PR), of the student with the mean score)

School	Grade	Number Taking Composite		CAT Verbal				FTBS Composite			
		L	NL	Longitudinal		Non-Longitudinal		Longitudinal		Non Longitudinal	
				SAS	PR	SAS	PR	GE	PR	GE	PR
Parkland	7	255	70	103.7	59	98.3	46	7.8	54	7.0	37
	9	255	74	105.0	62	99.5	49	9.7	57	8.9	43
Pooleville	7	223	87	103.7	59	102.5	56	7.6	49	7.2	41
	9	223	108	104.0	60	100.5	51	9.3	50	8.8	41
Pyle	7	264	78	114.5	82	113.0	79	9.0	78	8.8	73
	9	264	77	116.0	84	111.5	76	10.7	78	10.5	73
Randolph	7	145	56	105.0	62	94.3	36	7.7	52	6.2	21
	9	145	39	105.3	63	94.0	35	9.9	61	8.8	40
Redland	7	227	61	107.0	67	105.7	64	8.2	61	7.8	53
	9	227	45	106.0	65	100.5	51	9.9	62	9.6	56
Ridgeview	7	223	87	103.7	59	102.5	56	7.6	49	7.2	41
	9	223	108	104.0	60	100.5	51	9.3	50	8.8	41
Sligo	7	192	68	108.5	70	104.0	60	8.2	61	7.7	51
	9	192	114	108.5	70	100.5	51	9.9	61	9.0	44
Takoma Park	7	156	65	99.0	48	92.0	31	6.8	34	6.2	22
	9	156	86	99.5	49	90.5	28	8.5	36	7.5	21
Tilden	7	176	37	115.0	83	110.0	73	9.1	79	8.7	72
	9	176	48	116.0	84	112.5	78	10.8	79	10.3	70
West	7	211	38	107.0	67	101.7	54	8.1	59	7.7	52
	9	211	38	108.0	69	98.7	47	10.0	63	9.3	50
Western	7	180	55	113.5	80	104.0	60	8.8	74	8.8	73
	9	180	62	114.5	82	113.0	79	10.6	76	10.4	71
White Oak	7	243	52	111.5	76	106.0	65	8.7	71	8.0	58
	9	243	44	112.0	77	104.0	60	10.3	70	9.9	62
Wood	7	293	142	112.0	77	113.0	79	8.8	73	9.0	78
	9	293	49	110.0	73	107.5	68	10.6	75	9.9	61
COUNTY											
Same School	7	5389	3605	108.5	70	104.0	60	8.3	63	7.8	53
Both Years	9	5389	3178	109.0	71	105.0	62	10.1	65	9.5	53
COUNTY											
In MCPS	7	5974	2020	107.5	68	103.7	59	8.2	62	7.6	49
Both Years	9	5974	1593	108.5	70	103.3	58	10.0	63	9.3	50

CHAPTER 3

REVIEWS OF MAJOR STANDARDIZED TESTS USED IN THE
MONTGOMERY COUNTY PUBLIC SCHOOLS

389

INTRODUCTION TO REVIEWS OF MAJOR STANDARDIZED TESTS USED IN MCPS

The purpose of this chapter is to describe and analyze the four tests which are administered annually to all students in certain grades in the Montgomery County Public Schools (MCPS). The administration of entire batteries or of selected tests or batteries is mandated by the Maryland State Department of Education (MSDE) and/or by MCPS. The chart below gives the names and types of the tests, the grades at which they are administered, and the agency mandating administration in 1977-78.

Test Name	Type of Test	Administered in Grades	Mandated By
<u>Iowa Tests of Basic Skills</u> (entire)	Achievement	3, 5, 7, 9	MCPS
Reading		3	MSDE
Reading, Language Skills, Mathematics		5, 7	MSDE
<u>Tests of Academic Progress</u> (entire)	Achievement	11	MCPS
<u>Maryland Functional Reading Test</u>			
Form A (entire)		7	MSDE
Form B (entire)		9, 11	MSDE
<u>Cognitive Abilities Test</u> (entire)	Aptitude (IQ)	3, 5, 7, 9	MCPS
Verbal and Quantitative Batteries		11	MCPS
Nonverbal Battery		3, 5, 7	MSDE

The following information will be presented for each test: (1) the authors' recommendations of uses to be made of the test and test scores, (2) the general characteristics of the test, (3) scores, norms, and intended interpretations of scores, (4) reliability and validity of the test as reported by the publisher, and (5) examples of items by battery or test. This presentation is followed by an analysis and discussion of the characteristics of the test. The discussion deals with the tests' limitations, the extent to which the test can be used to predict or diagnose performance or academic progress, and the usefulness of the test in educational decision-making.

3-A. IOWA TESTS OF BASIC SKILLS

The Iowa Tests of Basic Skills (ITBS)¹ is a multiple-choice test designed to measure achievement in five skills areas basic both to education and to effective functioning in society: vocabulary, reading, language, work-study, and mathematics. While these skills are not acquired by individuals entirely in school, teaching them is the primary aim of formal schooling. The battery consists of a set of tests to be used in Grades 3-9 of the typical school system.

Some of the uses of the ITBS specifically recommended by the authors (MA, p.3) are to determine an individual's developmental level, to diagnose qualitative strengths and weaknesses in an individual's educational development, and to determine an individual's readiness for instruction. It is also recommended that information derived from the ITBS be used to aid administrative decision making, to diagnose strengths and weaknesses in group performance (class, school, or system), and to assess the effects of educational innovation.

General Test Characteristics

The ITBS, Forms 5 and 6, consists of five multiple-choice achievement tests designed for use in Grades 3-9.² The title of the battery reflects the fact the tests are intended to measure basic "generalized intellectual skills and abilities" (MA p.6) rather than an individual's knowledge of particular subject matter content. The following are the major skills areas and their tests:

<u>Vocabulary:</u>	No subtests
<u>Reading Comprehension:</u>	No subtests
<u>Language Skills:</u>	Spelling, Capitalization, Punctuation, and Usage
<u>Work-Study Skills:</u>	Map Reading, Reading Graphs and Tables, and Knowledge and Use of Reference Materials
<u>Mathematics Skills:</u>	Mathematics Concepts and Mathematics Problem Solving

1

Iowa Tests of Basic Skills, Form 5 and 6, College of Education, University of Iowa, Published by the Houghton Mifflin Company, Boston, 1971. Included in the administration packet are the Teacher's Guide for Administration, Interpretation, and Use (TG), 1971 and the Manual For Administrators, Supervisors, and Counselors (MA), 1974. References to these publications will be by initial only without footnoting.

2

Only Form 5 is used countywide in the Montgomery County Public Schools, though Form 6 is used on a very restricted basis for retesting and other purposes. Only Form 5 will be reviewed here. The forms are, however, essentially parallel, and except for very specific data, what is said about Form 5 applies also to Form 6.

Tests are scored separately, but scores are averaged to yield a Language Total, a Work-Study Total, and a Mathematics Total. These totals, Vocabulary, and Reading Comprehension scores are averaged to produce a Composite score for the entire test battery.

There are eight "levels" of each of the tests in the regular battery (and two in primary battery which is not discussed here). The levels are numbered from 9-14, and each corresponds approximately to an age and school-grade level. Level 9 corresponds roughly to an age level of 9 years, Level 10 to 10 years, and so on. The approximate grade level is found by subtracting 6 from the ITBS level, for example Level 9-6=third grade, Level 10-6=fourth grade, etc. (MA, p.6). Level 14 is used for both Grade 8 and Grade 9.

The approximate correspondence between test level, age, and grade level does not mean that a particular level must be administered only to students of a designated age or grade. The ITBS is published in a multi-level booklet which contains all tests and levels from 9-14.³ This permits three different testing plans. In the graded-testing plan, all students in a given grade are assigned the test for that grade. Out-of-level group testing involves administering only one test to an entire group (class, etc.), but the level used may be selected on the basis of average or typical group competence instead of by school grade. Individualized testing in which each individual in a group is assigned the most appropriate test level is also possible. Whatever the choice, directions and administration times are the same for all levels.

The tests are timed, and the administration of the entire battery takes about five hours. Time allowances are the following:

Vocabulary	17 minutes
Reading	55 minutes
Language	80 minutes
Work-Study Skills	85 minutes
Mathematics	65 minutes

The authors recommend that the tests be administered on four separate days or half-days.

Directions for planning the testing program, administering the tests, and interpreting and using test scores are given in the teacher's manual and the manual for administrators. Directions for taking the test, including sample exercises, are in the test booklet, but they are also to be read to examinees by the administrator. Responses to test items are recorded on a separate answer sheet which can be scored either by hand or by machine.

Norms, Scores, and Interpretations

Norming Procedures

The ITBS was standardized in October and November of 1970 simultaneously with the norming of the Cognitive Abilities Test and the Tests of Academic

3

Separate booklets by level are also published.

Progress. The satisfactorily large sample (base of 20,000 per grade) was stratified on the basis of community size and socio-economic status, and by public/parochial school category. Major geographic region was not used as a variable in stratification, but all regions of the country were well represented. Racial-ethnic group was also not used in sample selection, though it is assumed that this variable was accounted for adequately by general selection methods.

According to the administrators' manual (MA, p.40), the tests were standardized "with occasional exceptions" within a one-month period between October 12 and November 13, 1970. Thus, the beginning-of-year norms given in the manual were obtained directly from test administration. However, it must be assumed that mid-year (January) and end-of-year (April) norms were not obtained directly. Instead, they were apparently interpolated for Grades 3-8 and extrapolated for Grade 9. For example, autumn norms were obtained directly for Grade 3 and Grade 4. The Grade 4 autumn norms were apparently used as the basis for determining what Grade 3 mid-year and end-year norms should be (by interpolation). Fifth-grade autumn norms would have been used as the basis for interpolating grade mid-year and end-year norms, and so on through the grades. Ninth-grade mid-year and end-of-year norms would have been extrapolated from data obtained in the autumn.

Scores

Raw scores on each subtest and test are converted to grade-equivalent scores (GE). The GE shows "the grade level at which the typical pupil makes this raw score" (TG, p. 23) as determined by norm-group performance. According to the teacher's guide GE's are useful because "1) they indicate the developmental level of the pupil's performance, 2) they may be averaged for purposes of making group comparisons, and 3) they are suitable for measuring growth" (TG, p. 23). Tables for converting individual raw scores to GE's are given in the teacher's guide.

GE's are converted to percentile ranks and stanine scores, which also show the status of the individual in relation to students in the norm group. Percentile norms based on the national sample are given in the teacher's guide; they are shown for beginning-of-year, mid-year, and end-of-year (the latter two are interpolated). Tables for converting GE's into stanine scores are included in the percentile tables. Tables for converting GE's of school averages into grade percentiles are given in the administrator's manual. Special percentile norms for regions, large city schools, and Catholic schools are available but are not presented in the manuals. Standard score conversion tables are also available as a separate publication.

Item Analysis

An attempt has been made to make the ITBS useful for diagnosis and instruction. A detailed classification has been made of the skills measured by each item on every test and subtest except Vocabulary. So, for example, item 66 of the Form 5 Reading Comprehension test is designed to measure the examinee's ability "to deduce the meaning of words or phrases from context" (TG, p. 32). As the authors point out, these descriptions of skills can be written as behavioral objectives (TG, p.28).⁴ The classification of items by objectives is given by test in the teacher's guide.

⁴ For example, given an unknown or difficult word in a passage, the examinee will determine from the context the correct meaning of the word.

This taxonomy is intended to enable the teacher to diagnose an individual's specific strengths or weaknesses by objective and to use the information in planning and improving instruction. Item-by-objective scores can, of course, be summarized for a class, grade, school, or larger administrative unit.

Item-analysis data are available in a separate publication. The booklet of tables gives the difficulty index for each item, i.e., the percent of students in the norming sample answering the item correctly. According to the authors, these data provide a "norm-referenced approach" to skills assessment" (MA, p. 23).

Interpreting Scores

The ITBS is intended to be interpreted and used as both a norm-referenced and a criterion-referenced test.⁵ The tables of norms relate scores to the performance of the 1970 sample. Meaning is given to an individual's scores by comparing them to the average performance of students in the normative sample of the same age, grade, etc. In addition, individual or group performance on specific objectives can be determined from the detailed tables of items by objectives given in the teacher's manual. Thus, individual or group scores are given meaning by relating them, according to the authors, to "very specific behavioral objectives, stated in terms of what the pupil can do" (MA, p. 9).

Reliability

Split-halves reliability coefficients for four levels of the ITBS (Grades, 3, 5, 7, 8-9) are given in Table 3-A-1. All coefficients are high except the Maps and Graphs coefficient of Level 9. Even this, however, falls within a satisfactory range.

Table 3-A-1

SPLIT-HALVES RELIABILITY ANALYSIS OF ITBS TOTALS AND SUBTESTS FOR FOUR LEVELS

GRADE/LEVEL	V	R	LANGUAGE					WORK STUDY				MATH SKILLS			COMPOSITE
			Sp.	Cap.	Punct.	Use	L.Tot.	Maps	Graph.	Ref.	W.Tot.	Con.	Prob.	M.Tot.	
3 9	.87	.91	.87	.80	.80	.90	.95	.75	.77	.88	.91	.87	.82	.91	.98
5 11	.89	.93	.90	.84	.85	.88	.96	.83	.75	.90	.92	.82	.80	.89	.98
7 13	.89	.92	.91	.88	.87	.84	.96	.82	.80	.90	.93	.88	.82	.91	.98
8-9 14	.90	.93	.92	.88	.85	.82	.96	.85	.81	.91	.94	.88	.80	.91	.97

V = Vocabulary

R = Reading

Language: Sp=Spelling, Cap=Capitalization, Use=Usage, L.Tot.=Total Language

Work-Study: Maps, Graph=Graphs, Ref.=References, W.Tot.=Total Work-Study

Mathematics Skills: Con=Concepts, Prob=Problems, M.Tot.=Mathematics Total

Composite = Total test

5

Objectives-based is also sometimes used, though the two terms do not mean precisely the same thing.

Validity

Construct Validity

The ITBS is intended to measure "generalized intellectual skills and abilities" (MA, p. 6) in reading, language, work-study, and mathematics. In general, it does so. Knowledge of specific subject matter is not called for by the test. Whenever possible, all the information needed to answer items correctly is provided on the test by reading passages, maps, graphs, etc. The examinee must possess the generalized skills and abilities which make it possible to utilize the information contained on the test.

Content Validity

The content of the tests measures the intended construct, partly for the reason given above. In addition, items were selected to reflect broad, national educational trends and goals (as of 1970) and not the particular goals of a local school system. Criteria for item selection and emphasis were (MA, p. 46) as follows:

1. Placement and degree of emphasis in current educational and instructional materials
2. Recommendations from methods specialists, writers of methods books, and national curriculum committees
3. Frequency of occurrence and social utility
4. Frequency of error, particularly in language and mathematics
5. Importance based on seriousness of error, social penalty for error, instructional trends, etc.
6. Appropriateness of content for special types of students
7. Feedback from users.

These are reasonable and acceptable standards. The test battery can, therefore, be considered content-valid within the authors' intended framework when norm-referenced interpretations are made of scores.

Examples of Tests

The purpose of this section is to provide examples of the kinds of items found on the tests making up the ITBS battery. Most examples are practice exercises taken from the test booklet, though to preserve test security some are fictitious (and are identified). Since they are used to show item format and use of the answer sheet, they are rather simple. Actual test items increase in difficulty within and across test levels.

The number of items reported for any given test is the number for all levels combined (Grades 3-9). No examinee is expected to attempt all items. The number of items per level generally increases with increasing level. In the multi-level edition of the test, beginning and ending points by level are clearly indicated.

Vocabulary (114 items)

This test is placed first in the battery because it is mechanically easy to take. In each item the student is to determine which of four answer choices has "most nearly the same meaning" as the word in bold type. Practice sample:

0. CLOSE the door

- *1) shut
- 2) hold
- 3) behind
- 4) open

Reading Comprehension (178 items)

The examinee is given a passage to read and a set of questions based on the passage. Passages cover a wide range of topics and subject areas. Practice sample:

Every Sunday after dinner Pop gets a ball game on TV.
The next thing we know he is snoring.

S1. What does Pop do on Sunday afternoon?

- 1) Works in the yard
- 2) Goes to church
- *3) Takes a nap
- 4) Plays ball

Language: Spelling (114 items)

Basically, the student is to choose the one misspelled word from a set of words. Some items, however, contain no misspelled words. Practice samples;

- S1.
- 1) our
 - *2) mi
 - 3) your
 - 4) them
 - 5) (No mistakes)

- S2.
- 1) fill
 - 2) keep
 - 3) was
 - 4) saw
 - *5) (No mistakes)

Language: Capitalization (102 items)

The examinee is to identify the line in which an error in capitalization occurs or recognize that there are no errors. Practice samples:

- | | |
|--|---|
| S1. *1) Tom and Jerry
2) picked up all the
3) trash from the picnic.
4) (No mistakes) | S3. 1) Let's all help
2) to keep our streets
3) and sidewalks clean.
*4) (No mistakes) |
|--|---|

Language: Punctuation (102 items)

The punctuation test is similar to the capitalization test in format. The student is to identify the line in which an error in punctuation occurs or recognize that there are no errors. Practice samples:

- | | |
|--|---|
| S2. 1) We all fasten
2) our seat belts
*3) before, we leave.
4) (No mistakes) | S3. 1) We do our best
2) to make our home
3) a safe place to live.
*4) (No mistakes) |
|--|---|

Language: Usage (86 items)

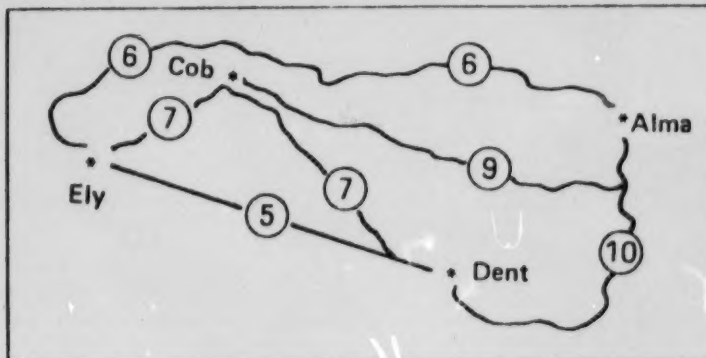
The test is designed to measure a student's knowledge of "how to use words according to the standards of correctly written English text" (p. 43). The examinee either identifies the sentence in which there is an error in usage or identifies the fact that there is no error. Practice samples:

- | | |
|---|---|
| S1. 1) He showed us the way.
2) Are you afraid to try?
*3) Me and him took turns.
4) (No mistakes) | S3. 1) Tim went first.
2) The bird flew away.
3) Pat found a dollar.
*4) (No mistakes) |
|---|---|

Work-Study: Map Reading (86 items based on 16 maps)

The examinee's task is to answer questions based on maps which vary considerably in the amount and type of information they contain. No practice exercises are given, so the following is a fictitious example.

○ = Route



FS1. What is the shortest route from Ely to Cob to Dent?

- 1) Route 5
- 2) Route 6 to Route 10
- *3) Route 7 to Route 5
- 4) Route 7 to Route 9 to Route 10

Work-Study: Graphs and Tables (74 items based on 16 graphs or tables)

The student answers sets of questions based on graphs and tables. As in the map-reading test, the variety of graphs and tables and the range of information they contain is rather large. Again this is a fictitious example.

NUMBER OF DELIVERIES BY MONTH



Mr. and Mrs. Kine own a grocery store. They deliver groceries to the surrounding community. The number of deliveries they made each month last year is shown in the chart above.

FS. In what season did they make the most deliveries?

- | | |
|-----------|------------|
| 1) Spring | 3) Fall |
| 2) Summer | *4) Winter |

Work-Study: Reference Materials (141 items)

These items vary so greatly that it is difficult to provide a single example typical of them all. In general, the items deal with dictionaries, indexes, and source materials. No practice example is given, so the following is fictitious.

FS1. In which section of a library would you be most likely to find a book dealing with the soils of Patagonia?

- | | |
|---------------|--------------|
| 1) Fiction | 3) Travel |
| *2) Geography | 4) Biography |

Mathematics: Concepts (136 items)

Items deal with a variety of mathematical concepts, including the basics of the number system, terms and operations, etc. The range is from simple counting to geometric concepts. Computation is required by some items. No practice exercises are provided, so the following is fictitious.

FS1. Which of the following expressions is equivalent to

$$9 \times (6 + 7) ?$$

A) $9 \times 6 \times 7$

*C) $(9 \times 6) + (9 \times 7)$

B) $(9 \times 7) + 6$

D) $(9 \times 6) + 7$

Mathematics: Problem Solving (96 items)

Items are generally based on problems stated verbally. However, pictures are sometimes used. Again, computation is required. Actual practice exercises:

S1. Peg has 1 sister and 2 brothers. How many brothers and sisters does she have?

- 1) 2
*2) 3

- 3) 4
4) (Not given)

S2. Ben had 5 butterflies in a jar. He opened the jar and 4 flew away. How many did he have left?

- 1) 5
2) 4

- 3) 2
*4) (Not given)

Discussion

The ITBS is, within certain limits, a soundly conceived and useful achievement test. The user must, however, accept the fact that the test is based on national rather than local educational trends and goals, and that the edition reviewed here reflects curriculum content that was current in 1970.⁶ Still, it is likely that the basic skills required for functioning in society are the same as they were in 1970, though the methods of teaching them may have changed. Within the limits of this caveat, the ITBS provides useful data for making judgments about individual and group performance in the broad skills measured by the tests. The data can be used to rank students or groups according to how well they performed on the tests, (i.e., in a norm-referenced interpretation).

To say that the test is soundly conceived is not to say that there are no problems associated with the ITBS. Primarily, problems are related to the meaning and interpretation of scores.

6

However, regional and other norms can be obtained, and even local norms can be generated. Furthermore, a new edition of the ITBS is scheduled to be released in 1978. The State of Maryland is committed to use the 1971 edition for another year beyond 1978-79.

Interpolated Norms: Mid and End-Year

As was said earlier, the mid-year and end-of-year norms which appear in the manuals were apparently interpolated between points established by test administration in the autumn for Grades 3-7. Eighth and ninth grade norms were apparently extrapolated. Thus, it is not known what the mid-year and end-of-year norms would have been had tests actually been administered to norming samples in each grade at those times. Therefore, norm-referenced interpretations of an individual's "growth" or of the progress of a large population of students must be made with caution when mid-year and end-of-year norms are used. This is also true when norm-referenced comparisons are made of the status of individuals or groups at the middle or end of the school year.

Criterion-Referenced Interpretation

The purpose of the classification of items by objectives is to make it possible for teachers and administrators to make criterion-referenced interpretations of scores. However, though norm-referenced interpretations can be made, the test does not lend itself to criterion-referenced interpretations. There are three major reasons for this: there are sometimes too few items per objective, there are no criteria or standards, and items often measure multiple objectives.

One of the spelling objectives, for example, involves the examinee's ability to identify confusion or substitution in the use of the letters l, el, and le. On the entire test (Grades 3-9) there are only four items which measure this objective. The skill measured by reading comprehension objective D-3 is the ability to "deduce the meaning of words or phrases from context" (TG, p. 32). The number of items measuring this objective at selected grades is:

Grade 3.....	4 items	Grade 7.....	14 items
Grade 5.....	8 items	Grade 8-9....	10 items

To a great extent this distribution reflects the emphasis placed on this particular objective in each grade nationwide. However, a Grade 3 teacher who assumed, on the basis of only four items, that a student could or could not use contextual clues to determine word meaning at a third grade level would be treading dangerous ground. Even the eight items at Grade 5 may not provide sufficient coverage of the objective.⁷

Even when the number of items is adequate there is no standard by which to judge the examinee's competence, and hence there is no criterion. It would be impossible, for example, to make a criterion-referenced interpretation of scores if, out of 10 items, a student got half right and half wrong. The manuals would not help the teacher to determine if the student had mastered or failed to master the objective purportedly measured by the items. To interpret the scores, the teacher could make use of the separate item analysis tables which show item difficulty by the proportion of students in the 1970 norming sample who got the item right. It might help to find that the items the student

7

One of the Grade 3 items and four of the Grade 5 items are based on passages which do not provide contextual clues the student can use to determine the meaning of the word to be defined "from context."

got wrong were also gotten wrong by a high proportion of the norming sample. But this is not a criterion-referenced interpretation of scores.

Finally, some test items are constructed in such a way that only one of the answer options is an example of the objective to be measured. For example, the previous mentioned spelling objective measures the student's ability to identify confusion or substitution in the letters l, el, and le. A typical item might ask the student to find the incorrectly spelled word:

- FS1. 1) cabel
2) lying
3) receive
4) pittance
5) (No mistakes)

The correct choice, cabel, is not only the one misspelled word, but it is also the only one which measures the objective. If the item were criterion-referenced, all options should involve l, el, or le (stable, compel, etc.).

It must be emphasized that the measurement of multiple objectives by one item is not peculiar to the spelling test. It must also be mentioned that the authors of the test claim that the multiple-objective format provides greater coverage than would be provided by a single-objective item (MA, p. 50). While this probably does facilitate norm-referenced interpretations, their position tends to undermine the belief that the items are measures of single behavioral objectives as the item classification tables would lead one to believe.

3-B. TESTS OF ACADEMIC PROGRESS

The Tests of Academic Progress: Form S (TAP)¹ are multiple-choice tests designed to measure achievement in six subject matter areas in Grades 9-12 in the typical school system. While they test knowledge of specific facts (e.g., atomic structure, causes of the Civil War, etc.), they also measure general academic skills like the ability to work with hypotheses, the ability to draw valid conclusions from data, etc. The following general uses of the TAP are recommended by the authors:

- Individual: Diagnosis of subject matter and skills strengths and weaknesses, individual program planning
- Class: Analysis of class knowledge and skills, and preparation and revision of lesson plans
- Large Unit: Analysis of performance of large groups (school, system, etc.), evaluation of curriculum, and preparation and revision of courses of study

General Test Characteristics

The TAP battery consists of six tests: Social Studies, Composition,² Science, Reading, Mathematics, and Literature. The tests are subdivided by grade level. The multi-level battery contains all tests and all levels and provides a continuous series of tests from Grade 9 through Grade 12. Examinees are allowed 45 minutes in which to complete the assigned level of each test. Directions for taking the tests are printed in the test booklets but are also read to examinees by the person administering the test. Two manuals (footnote 1), one for teachers and one for administrators, contain all the information needed for administering the test and interpreting scores and norms within the intended framework.

Norms, Scores, and Interpretations

Norming Procedures

The TAP was standardized in the autumn of 1970 simultaneously with the Iowa Tests of Basic Skills (ITBS) and the Cognitive Abilities Test (CAT).

¹Tests of Academic Progress: Form S, Houghton Mifflin Company, Boston, 1971. Included in administration packet are the Teacher's Manual (TM), 1971, and the Manual for Administrators (MA), 1972. Reference to these two publications will be by initial only.

²The Composition test does not require writing. It is therefore primarily a test of grammar, mechanics, and usage. (See later for example.) To make clear what the test measures, it is referred to in MCPS reports as the English test.

Sampling procedures were satisfactory. As is true for the ITBS, the published mid-year and end-of-year norms were apparently not obtained by direct testing in grade and should therefore be used with caution.

Scores

Raw scores are converted into standard scores and percentile norms. The standard score scale is based on scores obtained by the norming sample of Grade 11 students who were administered all items on all test levels. Scaling was extended upward and downward by equating score distributions in other grades with the Grade 11 standard. Standard scores have a mean of 50 for each grade level. Standard scores are converted to percentile norms, which make it possible to compare an individual's status on any given test with the performance of the 1970 standardization sample. Standard scores and percentile norms for school averages are also given in the administrator's manual.

Item Data

A classification was made of the information and skills measured by each test item as was done for the ITBS. The teacher's manual contains taxonomic tables of items by objectives. The administrator's manual contains beginning-of-year item-difficulty tables which show the percent of the norming sample getting each item correct.

Interpreting Scores

Like the ITBS, the TAP is intended to be viewed and used as both a norm-referenced and a criterion-referenced test. Percentile norms relate individual and school performance to the performance of the 1970 standardization sample. The performance of individuals on items by objective can be determined independently or summarized for groups.

Reliability

Reliability coefficients, standard errors of measurement, and standard deviations (in standard scores) for all tests are shown in Table 3-B-1. Reliabilities were obtained by the split-test procedure.

All reliability coefficients are high. The standard error of measurement (SEM) varies by test and grade level. SEM's at all grade levels are lowest for the mathematics test and, except in Grade 12, highest for the science test.

TABLE 3-B-1

STANDARD DEVIATIONS,
STANDARD ERRORS OF MEASUREMENT,
AND RELIABILITY COEFFICIENTS FOR FORMS

TEST	STANDARD DEVIATION IN STANDARD SCORE UNITS	STANDARD ERROR OF MEASUREMENT IN STANDARD SCORE UNITS	RELIABILITY COEFFICIENT
GRADE 9 (N = 1634)			
1. Social Studies	10.13	3.52	.88
2. Composition	11.29	3.39	.91
3. Science	8.16	3.63	.80
4. Reading	11.33	3.21	.92
5. Mathematics	7.83	2.93	.86
6. Literature	10.67	3.20	.91
GRADE 10 (N = 1504)			
1. Social Studies	10.34	3.43	.89
2. Composition	11.42	3.43	.91
3. Science	8.20	3.65	.80
4. Reading	12.53	3.02	.94
5. Mathematics	8.84	2.93	.89
6. Literature	10.09	3.35	.89
GRADE 11 (N = 1275)			
1. Social Studies	10.52	3.32	.90
2. Composition	11.64	3.29	.92
3. Science	7.58	3.56	.78
4. Reading	12.05	3.18	.93
5. Mathematics	9.94	2.98	.91
6. Literature	10.09	3.50	.88
GRADE 12 (N = 1118)			
1. Social Studies	10.23	3.23	.89
2. Composition	11.33	3.40	.91
3. Science	7.62	3.39	.80
4. Reading	12.15	3.21	.93
5. Mathematics	10.65	2.81	.93
6. Literature	9.13	3.41	.86

Source: Manual for Administrators, Supervisors, and counselors, 1972

Validity

According to the authors, "Each test in the battery was designed to measure the extent to which the objectives of a basic area of high school instruction have been achieved. The tests were constructed according to specifications reflecting currently accepted curriculum practices, then reviewed by subject matter specialists to assure thorough and accurate translation of test plans into specific test exercises" (MA, p. 1). As is true for the ITBS, items on the TAP were selected to reflect broad national educational trends and goals and therefore they may not reflect equally well the goals of a particular local school system. So long as this limitation is accepted, the TAP can be considered construct-valid and content-valid when norm-referenced interpretations are made of the tests.

Though both the ITBS and the TAP are achievement tests, the TAP differs from the ITBS in one important way. While the ITBS primarily measures general academic skills, the TAP primarily measures knowledge of specific subject matter content. That is, on the ITBS most of the information--and

in some cases all of it--needed to answer items correctly is contained in the test. The student must be able to read, compute, or interpret maps and graphs to make use of the information given. On the TAP it is not sufficient for the student to possess general skills. Rather, the examinee must know specific information about specific subjects to answer questions on all but the reading test.

Examples of Tests

The examples of the tests given here are practice exercises included in the directions in the test booklet. Two things should be understood, however. First, because the TAP measures both knowledge of subject matter and general academic skills, it is not possible with a few examples to convey the entire "flavor" of a test. Second, since the examples are practice exercises, they are generally rather easy.

The number of items reported for any given test is the number for all levels combined. Examinees are not expected to complete all items. The starting and ending points by grade are clearly identified in the multi-level edition.

Social Studies (120 items)

The content of the Social Studies test includes American history and government, world history, geography, economics, and sociology. General skills which are measured are the ability to interpret data in graphic form, problem solving, and critical thinking. Sample:

0. When addressing the chief executive officer of the United States, which of the following is the proper title to use?
- A) Your Majesty
 - B) Chief
 - *C) Mr. President
 - D) Leader

Composition (130 items)

The title of the test is a misnomer. This is actually a multiple-choice version of a test in English grammar, mechanics, usage, spelling, and organization. Passages on which test items are based are representative of the friendly letter, simple narrative, book report, business letter, and research report. Sample:

- 1 Hawaii, the last state
- 2 to be admitted to the Union
- 3 is the only one of the fifty
- 4 which is entirely surrounded
- 5 by water

0. Which of the following is the correct way to write line 2?
- A) to be admitted to the Union
 - *B) to be admitted to the Union,
 - C) to be admitted to the Union;
 - D) to be admitted to the Union.

Science (120 items)

The subjects included on the test are biology, physics, chemistry, and earth science. Emphasis is given to revised curricula (as of 1970) produced by the Biological Sciences Curriculum Study, Chemical Bond Approach, Chemical Education Materials Study, Earth Science Curriculum Project, Physical Science Study Committee, and Harvard's Project Physics. Skills measured by the test are the ability to apply principles to solve or explain a problem, the ability to work with hypotheses and to draw valid conclusions, the ability to understand probable causes of an observed change, and understanding of laboratory methods and their relation to theory. Since four broad areas of science are included on the test, and since the subsumed content of each varies so greatly, the following simple example gives a very limited picture of the entire test.

O. Which of the following is a water bird?

- A) Sparrow
- B) Chicken
- *C) Duck
- D) Robin

Reading (128 items based on 16 reading passages)

The reading test measures reading skill rather than subject matter and is therefore similar to most other reading tests. The student is given a passage to read and is then required to answer questions based on the passage. The types of reading materials included are description, history, biography, science, political science, news, and psychology. The skills measured are comprehension, identification (facts, etc.), application (implication), and evaluation (general theme, author's purpose, etc.). Sample:

A glossary of technical terms is primarily for persons with limited training in the field, rather than for the specialist. The terms defined are the common or basic ones used frequently in simple reports.

O. What is presented in a glossary?

- *A) Definitions of technical terms.
- B) A list of simple reports.
- C) Suggestions for trained specialists.
- D) Tips for amateurs.
- E) The selection gives no clue.

Mathematics (96 items)

As a generality, this is a problem-solving test. It is designed to measure the application of mathematical facts and skills in performing operations. However, it also measures the student's understanding of mathematical concepts. Subjects included on the test are arithmetic, algebra, geometry, structure (properties of number systems), estimation and approximation, use of set language, trigonometry, and other advanced topics. Sample:

0. What common fraction is equivalent to 25%?

- A) $1/8$
- *B) $1/4$
- C) $1/2$
- D) None of the above

Literature (126 items based on 11 reading passages)

The test is something like the reading test in that the examinee is given reading passages and asked to answer questions based upon them. However, all of the information required to answer the questions is not contained in the passages. In some cases, the examinee is asked to identify the "most probable author" of the selection. Other items measure the student's knowledge of literary convention and other specifics typically included in high school English programs. The types of reading selections included on the test are the short story, novel, essay, lyric poem, drama, autobiography, essay, and narrative poem. Skills which are measured (in addition to comprehension) are understanding of meanings in context, understanding of the content of a literary selection, understanding literary devices, using literary background, and making literary judgments. Sample:

- 1 The sun that brief December day
- 2 Rose cheerless over hills of gray
- 3 And, darkly circled, gave at noon
- 4 A sadder light than waning moon.

0. Which season of the year in the U. S. does this poem describe?

- A) summer
- B) spring
- *C) winter
- D) None of the above

It should be mentioned that of all the practice exercises this one conveys least well the nature of the test and the variety of the items.

Discussion

Much of what has already been said about the ITBS applies also to the TAP. As a nationally standardized test, the TAP measures both the knowledge of highly specific subject matter and the general academic skills which are the typical goals of secondary education. However, the user must, as with the ITBS, accept the fact that the TAP is based on national rather than on local educational trends and goals and that the test shares some common problems with the ITBS.

The accuracy of TAP end-of-year and mid-year norms is uncertain. When using these norms, even norm-referenced interpretations of the status of or "progress" made by individuals or groups must be made with caution.

Like the ITBS, the TAP is content-valid when norm-referenced interpretations are made of scores. An individual's standard score and percentile rank do show the student's status in relation to the 1970 standardization sample (but see the above precaution). However, the TAP is not content-valid when some types of criterion-referenced interpretations are made of scores. The reason is the same as that for the ITBS: there are sometimes too few items per objective to enable the teacher to tell whether or not the student actually knows the subject matter or possesses the skill being measured.

There are also no true criteria even when there are enough items. As was pointed out in the discussion of the ITBS, it would be extremely difficult to interpret the meaning of item-by-objective scores if, for example, a student got half of the items on a particular objective right and half wrong. It would be confusing to find on the item-difficulty tables that half of the items the student got wrong were "hard" and half were "easy" (and that the same were true of the items the student got right). In any event, the use of item-difficulty tables leads back to a norm-referenced rather than to a criterion-referenced interpretation of scores.

However, as was shown in the section on validity, the TAP differs from the ITBS in one important way. Most of the test items (about 70%-75%) require knowledge of highly specific information or a combination of specific information and specific operations. A teacher could therefore use item-by-objective-by-subject data to analyze an individual's strengths and weaknesses in understanding specific subject matter. Despite the apparent specificity of the analysis, however, it would, for reasons given previously, turn out to be rather gross. It could be observed, for example, that the individual got most of the questions dealing with American history right but most of the questions about European history wrong. Below that general level (American vs. European), there would be too few questions per objective to provide further diagnosis or prescription. And, of course, there would be no criteria against which to judge "mastery" or non-mastery of specific objectives.

Finally, and again as is true for the ITBS, it is at the level of specific objectives that there are likely to be the greatest differences between national trends and goals measured by the TAP and the goals of a local school system. Thus results of the TAP can suggest only in the most general way that problems may exist, and then only if local goals and instruction closely parallel the goals and content of the TAP.

3-C. THE COGNITIVE ABILITIES TEST

The Cognitive Abilities Test¹ (CAT), according to the authors, is a test of "effective cognitive functioning" or "intelligence" (TM, p. 30) and "a further development of the Lorge-Thorndike Intelligence Tests" (TM, p. 3). It consists of a series of multiple-choice test batteries, and the multi-level edition provides a continuous set of tests for Grades 3-12.

The authors recommend (EM, pp. 52-55) a rather large number of uses of the CAT and its scores and norms:

Individualizing Instruction: Selecting curriculum materials, organizing small instructional groups, setting the pace of instruction, and setting goals of instruction (i.e., differentiating goals and expected levels of achievement).

Identifying Disabilities: Identifying learning disabilities and inconsistencies in performance.

Counseling: Curriculum or course selection and planning for post high school education.

Reporting to Parents: Providing parents with an individual student's relative standing in ability. Making clear the implications this has for the individual's progress in the near future.

Surveying the School: Detecting changes in student characteristics, determining suitability of curricular offerings, and helping with other long-range planning.

The CAT is often used in conjunction with the Iowa Tests of Basic Skills (ITBS) and the Tests of Academic Progress (TAP) because it was normed on the same students as the ITBS and TAP in 1970. ITBS or TAP scores are then compared to CAT scores in an attempt to determine if the achievement of individuals or groups is commensurate with "ability" as measured by the CAT. Comparative tables (CAT vs. ITBS) are available from the publisher on request. It is explained in the manual that "such tables are helpful where one wishes to ascertain whether a given pupil is performing at a level of achievement that might reasonably be expected of him according to his ability...." (TM, p.27).

1. R. L. Thorndike, and E. Hagen, Cognitive Abilities Test: Multi-Level Edition, Houghton Mifflin Company, New York, 1971. The complete administration packet includes the Examiner's Manual (EM), 1971, and the Technical Manual (TM), 1974. When cited as reference throughout this review, these manuals will be referred to by initials only without further footnoting.

General Test Characteristics

The CAT is made up of three multiple-choice batteries, each consisting of a set of tests. They are as follows:

<u>Verbal Battery:</u>	Vocabulary, Sentence Completion, Verbal Classification, and Verbal Analogies
<u>Quantitative Battery:</u>	Quantitative Relations, Number Series, and Equation Building
<u>Nonverbal Battery:</u>	Figure Classification, Figure Analogies, and Figure Synthesis

Each test is further divided into eight "levels" which roughly correspond to school grade levels and, thus, also approximately to age (Level A=third grade, Level B=fourth grade, etc. to Level H=Grade 12+).

In the multi-level edition, all levels of all batteries are in a single booklet, which provides a continuous series of tests for Grades 2-12+. Detailed directions for taking the tests are printed in the test booklet, but the examiner also reads directions aloud. Students' responses are recorded on a separate answer sheet which can be machine or hand scored. The tests are timed. Limits are 34 minutes for the Verbal Battery and 32 minutes each for the other two batteries.

National Sample and Norms

Sample

The 1970 norms were based on large student samples (original base of 20,000 per grade) stratified by community size and public-parochial school category (TM, pp. 10-13). Major geographic regions of the country were well represented, though region was not a primary variable in sample selection.

Race was not a criterion used in selecting samples. It is claimed, however, that during the process of selecting test items a separate analysis was made for a group of about 100 students at each level (except Grade 12) enrolled in a predominantly Black school (TM, p. 7). Items which were particularly difficult for these students are said to have been discarded (EM, p. 101).

Norms

The publisher provides three types of norms to be used in interpreting the meaning of an individual's scores: standard age scores, percentile ranks by age or grade, and stanines by age or grade. All three are discussed in Chapter 4.

Reliability and Standard Error of Measurement

Reliability

Estimates of the reliability of each of the CAT batteries (Kuder-Richardson Formula #20) are given in Table 3-C-1. All values are satisfactorily high.

Table 3-C-1

Kuder-Richardson Formula #20 Reliability Estimates by Test Level
and by Grade (N = 500 for each grade)

Test Level	Grade	Verbal			Quantitative			Nonverbal		
		Mean*	S D*	r_{11}	Mean*	S D*	r_{11}	Mean*	S D*	r_{11}
A	3	44.16	20.08	.957	31.76	11.60	.931	52.72	15.60	.949
B	4	53.48	18.77	.953	34.43	10.72	.916	57.10	14.35	.943
C	5	59.34	18.69	.952	36.88	10.92	.923	58.29	13.52	.933
D	6	65.79	16.34	.941	37.53	10.47	.916	59.13	12.96	.929
E	7	64.96	17.68	.949	35.96	10.51	.912	57.07	13.77	.937
F	8	63.75	16.80	.944	34.55	11.15	.912	56.00	13.42	.932
	9	68.68	15.71	.939	39.36	11.29	.918	58.51	12.63	.928
G	10	65.01	16.17	.940	37.17	12.09	.929	55.92	12.98	.928
	11	66.52	16.22	.942	37.53	12.21	.929	56.58	12.56	.923
H	12	60.87	16.38	.943	36.07	12.30	.927	53.09	12.06	.913

*Means and S D's are reported in raw score units

Source; Technical Manual, p.15

Standard Error of Measurement (SEM)

Table 3-C-2 shows the weighted average SEM of each test computed across several raw-score levels.

Table 3-C-2

STANDARD ERROR OF MEASUREMENT IN STANDARD AGE SCORE UNITS
WEIGHTED AVERAGE BY BATTERY AND GRADE

Battery	Grade 3	Grade 5	Grade 7	Grade 10
Verbal	3.16	3.10	3.62	3.50
Quantitative	4.55	4.80	4.82	4.63
Nonverbal	3.74	4.41	4.37	4.84

Source: Technical Manual, p.17.

Data based on split-half analysis of data from norming administration. SEM's vary by score level.

For practical purposes it can be assumed that the SEM for each test is about 3.5 (TM, p.16). This means that an individual who obtains, for example, a score of 104 on the Verbal Battery can be thought of as scoring in the range of 97-111.² Explanation of the meaning of the SEM is included in the manuals, and test users are cautioned about over-strict interpretations of a single score.

Validity

Construct Validity

The authors say that the construct measured by the CAT is "effective cognitive functioning," which they sometimes equate with "intelligence" (TM, p. 30). They also say, however, that they "have been more concerned with what can be said about the activities called for in the test than they have with any formal definition of the ability or abilities being measured" (TM, p. 25).

Correlations between the CAT and the Stanford-Binet Intelligence Scale (SBS) are presented to establish the construct validity of the CAT, i.e., that it measures "intelligence." The SBS was chosen as a standard because the authors say it is "an individual ability test that has long stood as the yardstick against which other tests are measured" (TM, p. 31). Table 3-C-3 shows the correlations based on scores obtained by 554 individuals who had taken the CAT in 1970 and the SIS in 1971-72.

Table 3-C-3

Correlations of Binet with CAT

Age Group	N	Binet S.D.	Verbal		Quantitative		Nonverbal	
			r	S.D.	r	S.D.	r	S.D.
9-11	197	17.8	.72	19.7	.65	17.4	.60	17.7
12-14	238	17.6	.77	19.2	.68	18.5	.68	17.3
15+	119	17.2	.78	16.5	.68	18.0	.65	17.6

Source: Technical Manual, p.31

These are only modest correlations. Furthermore, as the authors point out, they are based on the scores of a group which was "slightly more variable than the national standardization group" (TM, p. 31). The correlations are therefore probably higher than they would have been had they been based on the entire national sample. It should be noted that the Verbal Battery of the CAT is the one which correlates most highly with the SBS at all age levels while the Nonverbal Battery correlates least well.

2

That is, if the test could be administered to the same individual repeatedly (assuming no change in learning, motivation, etc.), 95% of the time the individual would score in the range of $\pm 2 \times \text{SEM}$. In this case, $2 \times 3.5 = 7$, and $104 \pm 7 = 97$ to 111 .

Correlation between scores of 173 students who had taken "certain" tests of the Differential Aptitude Tests (DAT) in Grade 8 and the CAT in Grade 9 are also presented in support of the CAT's construct-validity.

Table 3-C-4

Correlation of 9th Grade CAT with 8th Grade Differential Aptitude Tests (N = 173)

DAT	COGNITIVE ABILITIES TEST		
	Verbal*	Quantitative	Nonverbal
Verbal Reasoning	.74	.55	.54
Numerical Ability	.54	.70	.65
Abstract Reasoning	.59	.59	.65
Space	.40	.45	.61

Source: Technical Manual, p.31

Except for the correlation between the two verbal tests, these correlations are generally even lower than those obtained between the CAT and SBS. They are also based on a small number of cases. However, the authors say that these correlations are "substantial," though they also point out that "clearly the tests are not identical" (TM, p. 31). As might be expected, verbal scores correlate most highly with verbal scores and quantitative scores correlate most highly with numerical scores.

Finally, factor analyses of the 10 CAT tests were performed for Grades 3, 5, 7, 9, and 11, based on samples of about 500 cases. Table 3-C-5 below shows only median factor loadings for the five factor analyses.

Table 3-C-5

Median Factor Loadings of CAT Tests

Subtest	General	Verbal	Figural	Quantitative(?)	Specific
1. Vocabulary	.67	.50	-.02	.08	.37
2. Sentence Completion	.73	.50	-.03	.02	.25
3. Verbal Classification	.74	.39	.02	-.04	.32
4. Verbal Analogies	.80	.29	.04	.03	.29
5. Quantitative Relations	.76	.01	-.04	.20	.37
6. Number Series	.82	-.03	.02	.06	.41
7. Equation Building	.74	-.02	.00	.21	.40
8. Figure Classification	.67	-.01	.39	-.05	.50
9. Figure Analogies	.76	.00	.41	-.02	.38
10. Figure Synthesis	.62	-.02	.36	.09	.53

Source: Technical Manual, p.33

Three factors appear: verbal, figural, and general. Evidence for a fourth anticipated quantitative factor is weak. Identification of the factors is also rather weak. According to the authors, the verbal factor "appears to reflect the available store of word meanings" (TM, p. 32). The figural factor is said to "represent some type of ability of work with figural material" (TM, p. 32). The authors say about the general factor, which would seem to be the most important in establishing construct validity, that "perhaps some such term as 'relational thinking with abstract material' would characterize this factor well" (TM, p. 32). Given the nature of factor analytic techniques, there is also, of course, the strong possibility that another description would serve as well or better.

Content Validity

The authors state the the CAT "can be characterized by the following statements and that these characteristics (of the test) describe behavior that it is "important to measure for understanding an individual's educational and work potential " : (1) tasks deal with abstract and general concepts, (2) tasks require interpretation and use of symbols, (3) examinee must deal with relationships among concepts and symbols, (4) tasks require examinee to be flexible in basis for organizing concepts and symbols, (5) examinee must use experience in new appterns, and (6) power rather than speed is emphasized (TM, p. 25). It is also stated that an attempt was made "to keep the separate items relatively familiar and to have the tasks depend primarily on ability to deal with the relationships among the components" (TM, p. 26). The Vocabulary test, however, is said to be "explicitly a measure of supply of verbal concept ."

The Nonverbal Battery was included in the CAT because, according to the authors, "it is important to take account of the fact that for some (students)... a verbal test in English, and possibly a quantitative test oriented to school experiences, may constitute an inadequate basis for appraising the individual's abilities" (TM, p. 3). The Nonverbal Battery is said to 'tap a 'fluid' type of ability that is not bound by formal school instruction" (TM, p.3).

Criterion-Related or Predictive Validity

Evidence for the criterion-related validity of the CAT is given by correlations between scores on the CAT and the ITBS and between the CAT and TAP.

Table 3-C-6 shows CAT-ITBS correlations.

Table 3-C-6

Correlations of Cognitive Abilities Test and
Iowa Tests of Basic Skills (N=500 at each grade level)

Grade	CAT Form	Iowa Tests of Basic Skills				
		Vocab.	Reading	Language	Work Study	Arith.
3	Verbal	.80	.78	.81	.82	.77
	Quant.	.63	.59	.69	.76	.75
	Nonverb.	.55	.52	.58	.66	.63
4	Verbal	.79	.76	.77	.73	.71
	Quant.	.63	.65	.67	.70	.74
	Nonverb.	.53	.56	.57	.62	.57
5	Verbal	.84	.83	.80	.75	.74
	Quant.	.68	.68	.68	.71	.76
	Nonverb.	.57	.59	.59	.63	.62
6	Verbal	.83	.80	.78	.76	.74
	Quant.	.66	.65	.69	.74	.78
	Nonverb.	.54	.54	.55	.64	.65
7	Verbal	.79	.80	.76	.76	.71
	Quant.	.67	.68	.73	.77	.79
	Nonverb.	.55	.57	.58	.66	.62
8	Verbal	.81	.83	.75	.79	.72
	Quant.	.67	.68	.69	.75	.78
	Nonverb.	.58	.58	.57	.68	.62
Average	Verbal	.81	.80	.78	.77	.73
	Quant.	.66	.66	.69	.74	.77
	Nonverb.	.55	.56	.57	.65	.62

Source: Technical Manual, p.26

The generality is that of the three batteries making up the CAT the Verbal Battery correlates most highly with four of the five ITBS subtests at all grades: Verbal, Reading, Language, and Work Study. The CAT Quantitative Battery correlates most highly with the ITBS Arithmetic subtest at all grade levels. The CAT Nonverbal Battery correlates least well with all of the ITBS subtests.

Correlations between the CAT and the TAP are given in Table 3-C-7.

Table 3-C-7

Correlations of Cognitive Abilities Test with
Tests of Academic Progress (N=500 at each grade level)

Grade	CAT Form	Tests of Academic Progress					
		Social Studies	Composition	Science	Reading	Mathematics	Literature
9	Verbal	.70	.78	.64	.77	.66	.78
	Quant.	.66	.75	.62	.73	.78	.69
	Nonverb.	.57	.63	.53	.59	.62	.59
10	Verbal	.78	.78	.68	.77	.64	.74
	Quant.	.66	.73	.61	.73	.78	.66
	Nonverb.	.54	.62	.54	.62	.64	.58
11	Verbal	.79	.76	.62	.79	.64	.76
	Quant.	.69	.65	.61	.68	.76	.65
	Nonverb.	.57	.56	.53	.60	.62	.57
12	Verbal	.78	.78	.59	.82	.64	.78
	Quant.	.68	.67	.60	.71	.80	.64
	Nonverb.	.61	.62	.54	.66	.63	.62
Average	Verbal	.76	.78	.63	.79	.64	.76
	Quant.	.67	.70	.61	.71	.78	.66
	Nonverb.	.57	.61	.54	.62	.63	.59

Source: Technical Manual, p. 27

Again, of the three CAT batteries, the Verbal correlates most highly at all grades with all of the TAP subtests except Mathematics, which correlates most highly with CAT Quantitative Battery. The Nonverbal Battery again correlates least well with any of the TAP subtests.

The authors warn that "these tables represent prediction only in the statistical sense, and do not involve any forecasting over time" (TM, p. 26). Thus they say the Verbal Battery is the most effective "indicator of general academic competence" and that the Quantitative Battery is "an indicator of abilities important for arithmetic and mathematics" (TM, p. 27, *italics added*). However, many of the uses of the CAT recommended by the authors involve prediction in something more than a strict statistical sense (diagnosis, course planning, planning for post high school education, differentiating expected levels of achievement, etc.).

417

Correlations between CAT scores and teachers' grades are shown in Table 3-C-8. The data are derived from very small samples of students, and the grading systems employed by different schools and at different grades were quite varied.

Table 3-C-8

Prediction of Third and Sixth Grade Teachers' Marks and Achievement Test Scores

Predictor	Teachers' Reading Grades				Teachers' Arithmetic Grades				
	Grade 3		Grade 6		Grade 3		Grade 6		
	A	B	D	G	A	B	D	F	G
Grade 1 CAT Primary	.57	.46	.11		.51	.55	.28		
Grade 3 CAT V	.70	.76	.50		.61	.72	.61		
Q	.56	.66	.23		.62	.79	.54		
NV	.58	.60	.31		.58	.72	.42		
Grade 3 L-T V				.67				.51	.66
NV				.48				.44	.54
Grade 6 CAT V				.68				.53	.63
Q				.56				.63	.61
NV				.42				.47	.44

Source: Technical Manual, p.30

As might be expected, these correlations range from low to modest and probably say as much about the uncertainty of grading standards as about the criterion-related validity of the CAT.

Examples of Tests

The purpose of this section is to illustrate the kinds of items found in the various CAT tests. The examples are practice exercises which are part of the instructions in the test booklet. (Correct answers are shown by asterisk.) Since they are practice exercises they are quite simple. The actual items on the test increase in difficulty within and across levels.

The battery to which a particular subtest belongs is indicated by initials: VB=Verbal Battery, QB=Quantitative Battery, and NV=Nonverbal Battery. The number of items reported is for all levels combined. No examinee is expected to complete all items, and there are clearly marked starting and ending points by level in the multi-level edition of the test.

VB: Vocabulary (60 items)

As the authors point out, the Vocabulary test is "a measure of supply of verbal concepts," or, more simply, a test of words and synonyms known or not known by the student in advance of taking the test. The format of the items is

O. WISH A agree B bone C over *D want E waste

The examinee is to select the word to the right which most nearly means the same thing as the word in dark type.

VB: Sentence Completion (60 items)

In this test the student's task is to select an answer which "makes the truest and most sensible complet sentence" out of a sentence from which a word is missing.

O. The fire is _____ A wet B green *C hot D running E round

VB: Verbal Classification (60 items)

The student is presented with a set of words united by some broad underlying concept. The student must first identify or discover the concept, then select from a list of options another word which also fits the concept set.

O. MOUSE WOLF BEAR

A rose *B lion C run D hungry E brown

VB: Verbal Analogies (60 items)

Here the student is to complete a statement in verbal logic, "X is to Y as A is to (one of the options)." The arrow means "is to," the colon means "as."

O. big__ large:: little

A boy B small C late D lively E more

This is the last of the tests in the Verbal Battery.

QB: Quantitative Relations (60 items)

Basically the test requires the examinee to compare two units to determine whether (and which) one is larger than the other or if they are equal. Answer choices are: Column I larger than Column II, Column II larger than Column I, or Columns I and II are equal.

Column I

Column II

///

//

Many of these items are quite complex and many involve angular measurement, square and cube roots, negative exponents, etc. (at appropriate levels). At all levels some of the items require computation.

QB: Number Series (48 items)

The examinee is presented with a number series which progresses in some regular way. The task is to identify the progression, then to determine which answer option comes next in the series.

000. 10 12 14 16 18 20 L 21 *M 22 N 23 P 24 Q 25

Again at appropriate levels, items may include fractions, progression of algebraic series, progression by divisors, etc.

QB: Equation Building (36 items)

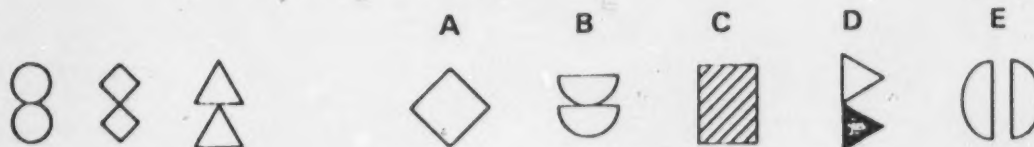
In each item the examinee is given a set of numbers and a set of operations symbols. For example: 2 2 3 + X. The task is to arrange the numbers and signs as an equation (using all numbers and signs), then to select from a set of options the value the equation would yield when carried out. The entire item would appear as

000. 2 2 3 + X L 6 *M 8 N 9 P 10 Q 11

The student is free to arrange numbers and signs in any order, so various equations could be set up: $2 + 2 \times 3 = 8$, or $3 + 2 \times 2 = 7$. Only one, however, will yield one of the answer options. More complex items involve the use of () for ordering operations, square root, fractions, etc. This is the last and probably the most difficult of the tests on the Quantitative Battery.

NV: Figure Classification (60 items)

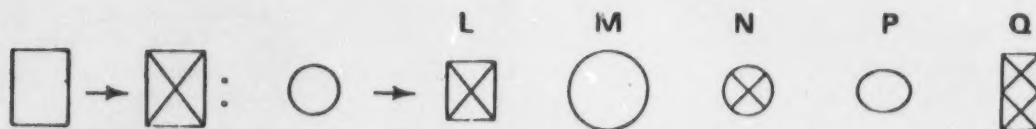
Any one item consists of a set of three given figures which are alike in some way or, as in the Verbal Classification test, united by some underlying concept which the examinee must discover. The student then selects from the answer options a figure which falls into the same classification.



In the more complex items a number of variables are used singly or in combination to "define" the underlying concept: shape, position, open vs. closed, black or white, etc.

NV: Figure Analogies (60 items)

As in the Verbal Analogies test, the examinee is asked to complete the statement Figure A is to Figure B as Figure C is to (answer option).



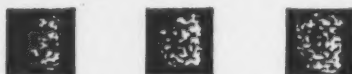
The right answer is N. You should have marked answer space N for Sample Exercise 000.

Again, the analogies become quite complex; and variables like color, size, etc., are used to create the analogy.

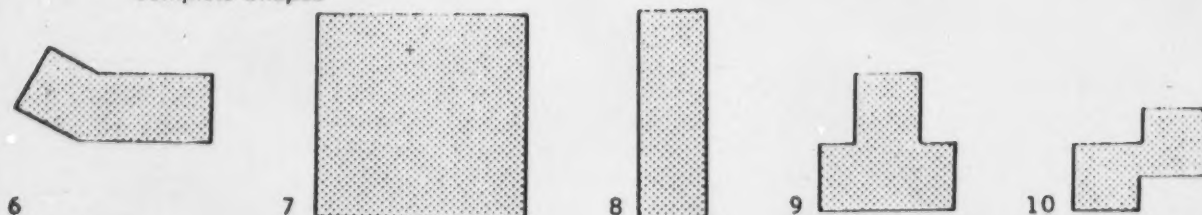
NV: Figure Synthesis (13 items)

The Figure Synthesis test is a bit difficult to describe briefly. Essentially, as shown by the example below, the examinee is presented with two, three, or four "pieces" resembling two-dimensional views of parts of a jig-saw puzzle. Answer choices are also two-dimensional views of figures which might be thought of as possible versions of the "completed puzzle." The student's task is to determine which of the option-figures could be formed from the given figure set.

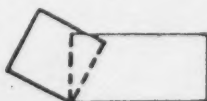
Given Pieces



Complete Shapes



Look at shape 6. Can you follow the rules and still place the three small pieces to completely cover the shaded space? That's right, the answer is No. To cover the shaded area you would have to put part of one piece on top of another piece as shown by the dotted lines below.



In determining the correct choice, the student must follow five rules given at the beginning of the test.³

Discussion

The CAT has some of the favorable characteristics which might be expected of a test produced by a major publisher. The format of the multi-level edition is clear and flexible, and the Examiner's Manual provides all of the information needed for administering the test and interpreting scores within the authors' intended framework. Norms are based on very large samples, and reliabilities of the subtests are high.

Because of these characteristics, students can be "sorted" on the basis of CAT scores. An individual whose score on the Verbal Battery is at the 90th percentile has performed better than 90% of the students in the 1970 norming sample. A student who scores at 115 has performed better than another student who scores only 93. There is, therefore, no question about the meaning of CAT scores as simple descriptions of relative status on a particular set of tests.

However, despite the many recommendations the authors have made for using CAT scores, it is not at all clear how the scores should be interpreted except as status indicators. It might be accepted that the high-scoring student is functioning more effectively in some way than the low-scoring student, a fact which can be determined in many other educationally useful ways. It is not certain, however, that scores on the CAT are measures of "an individual's educational and work potential." There could be many and various reasons for a given level of performance on the CAT besides intelligence or potential. The central issue in interpreting and using CAT scores, therefore, is the tests' validity: what the test measures uniquely and its ability to predict academic achievement.

Construct Validity

The authors use "effective cognitive functioning," "cognitive abilities," and "intelligence" synonymously and interchangeably. Yet they warn that the CAT "appraises developed abilities...(which) represent the interaction of a life history of experiences impinging upon a specific biological organism" (EM, p. 50). The emphasis on "developed" would seem to imply that the abilities measured by the CAT are acquired through experience and formal schooling, and that an individual may possess educational and work potentialities which are not measured by the test.

The data presented to support the construct validity of the test are rather limited. There is nothing about the magnitude of the correlations between the CAT and other measures of intelligence or aptitude, the SBS and the DAT, which

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Briefly they are (1) all given pieces must be used, (2) each piece may be used only once, (3) the shaded part of the correct choice must be covered completely, (4) no piece can be placed over another, and (5) the pieces can be turned or flipped over in any direction.

compels belief that the CAT measures cognitive abilities or intelligence as a unique construct or trait. In fact, of the three CAT batteries, it is the Verbal Battery which correlates most highly with the SBS at all levels, and the only one which correlates slightly more than modestly with a test of the DAT. This suggests strongly that linguistic competence may be the most important component of whatever it is the CAT measures.

Correlations between the CAT and intelligence and aptitude tests are used to support construct validity; while correlations between the CAT and academic achievement tests, the ITBS and TAP, are used to support criterion validity. It is possible (but not necessarily so) that the difference in format between the CAT and the SBS might have depressed the potential correlations. However, argument from correlational data is to be accepted, it would seem logical that the higher correlations with the ITBS and the TAP support the belief that the CAT has greater construct validity as an achievement test. It is therefore questionable practice to use the test and its scores for the many purposes recommended by the authors. As a measure of educational potential (as separate from acquired skills) of any individual or group, the CAT is particularly suspect.

Content Validity

Construct validity and content validity are closely related, and actual test items should measure the trait or construct the test purports to measure. Since the CAT purports to measure "effective cognitive functioning" or "intelligence," the items should reflect this in a unique way. This is not true for many of the items on the CAT.

In general, there are what might be called lower or minimum limits on the student's ability to attack the CAT at all. These limits are set by the test content, the nature of the items, which requires that at a minimum examinees have a reasonably well developed vocabulary, reading ability, and the ability to deal with numbers and arithmetic operations. The examinee who has not learned these things well, for whatever reasons, enters the test with a handicap.⁴

Furthermore, much of the content of the CAT is the same as or similar to the content of achievement tests, or items may require the same operations required by achievement test items. The CAT Vocabulary test, for example, is very much like the vocabulary test on the ITBS. The Sentence Completion test is a combination reading/vocabulary test, and it would be expected that the student who can perform well on this test would also perform well on other reading tests like that on the ITBS. It is therefore not surprising that the CAT Verbal Battery is the one which best correlates with other measures.

Many of the items on the CAT Quantitative Relations test are similar to items found on the ITBS, and many also involve the same arithmetic or algebraic operations demanded by both the ITBS and the TAP. The Equation Building test is probably even more heavily dependent on previous achievement than any of the other tests of the Quantitative Battery. The operations a student must perform to attack this test successfully are the same as those called for in

⁴ This is merely a statement of fact, not an argument for "culture free" tests.

a large number of items on the ITBS and TAP mathematics tests.

It should not be inferred from the foregoing discussion that the CAT is simply another version of the ITBS or the TAP. The test does measure cognitive skills beyond the fundamentals of vocabulary or computation. For example, if a student already possesses the vocabulary employed in the Verbal Analogies subtest, then the subtest also measures the student's ability to perceive verbal relationships, discover concepts, etc. Other subtests also measure cognitive dimensions beyond the fundamentals provided that the student possesses the basic skill or skills involved in the items. It should be noted that it is possible that the skills which lie beyond the fundamentals can be improved by instruction.

Criterion-Related or Predictive Validity

The positive taken by the authors in regard to the use of the CAT in prediction is somewhat contradictory. They warn that correlations between the CAT and either the ITBS or the TAP are predictive "only in the statistical sense" (TM, p. 26). Yet they recommend using the test results in ways that seem to go beyond statistical prediction: setting goals, planning for post high school education, ascertaining "whether a given pupil is performing at a level of achievement that might reasonably be expected of him according to his ability level.." (TM, p. 27), and so on.

As has been shown in the sections on construct and content validity, it is questionable that the CAT actually makes a unique contribution to educational assessment and planning. Parts of the CAT measure skills similar to those measured by the ITBS or the TAP. Thus, the use of the CAT to predict ITBS or TAP achievement scores may be circular. Furthermore, the high correlations between the CAT and the two achievement tests may suggest that CAT scores are not needed to acquire additional information for setting goals, planning, and all the other uses recommended by the authors of the CAT.

Finally, the use of CAT scores as standards against which adequacy of achievement is measured could tend to mask inadequacies in a school system or its curriculum. Students who score at low levels on the CAT are, for reasons already given, likely to score at low levels on the ITBS or the TAP. The observation (using CAT scores as the standard) that these students are "working at their capacity" would not explain or justify the performance and would not suggest how to improve the curriculum to meet their needs.

Despite the extensive item-by-objective tables and the recommendations for improvement of instruction contained in the teacher's guide, criterion-related interpretations of ITBS scores are of doubtful validity. The tests are not precise diagnostic tools. At best, item performance scores suggest only in the most general way that a problem may exist. Furthermore, it is at the item-by-objective level that there is likely to be the greatest difference between national trends and the specific educational goals of a local school system. Criterion-referenced interpretations of group scores (classes, schools, etc.) should therefore be made with extreme caution if they are made at all.

3-D. THE MARYLAND FUNCTIONAL READING TEST

The Maryland Functional Reading Test: Forms A and B (MFRT)¹ is a multiple-choice test designed to "measure whether students have minimal performance levels to read materials needed for functioning in society (sic)" (GA, p. 1). The test is based on the instructional objectives of the Maryland Functional Reading Program, and its administration is mandated by the state. The test is intended to be criterion-referenced (GA, p. 1). According to the test manual, the MFRT can be used "to identify individual strengths and weaknesses using functional reading materials...and to give data for planning relevant individualized programs based upon the test results" (GA, p. 1). A computer-based scoring and reporting system is said to provide "summary and diagnostic information to teachers and administrative personnel" (GA, p. 3).

General Test Characteristics

The MFRT is a multiple-choice test intended to measure student achievement in four functional reading categories: (1) locating information from reference sources, (2) understanding forms, (3) gaining information, and (4) following directions. There is a fifth category, using reading for attaining personal development, which consists of self-report items. There are two forms of the test. Form A is intended to measure the objectives of the elementary school functional reading program and is administered in Grade 7. Form B is designed to measure the objectives of the secondary school program and is administered in Grade 9 and Grade 11. In the future, Form B will be administered systemwide only in Grade 9. Individuals will be able to take the test or an alternate form until they are able to demonstrate competency.

A competency cut-off score of 80% of each subtest and/or the total test has been established. The self-report items of Category 5 do not contribute to the competency score. There are 123 items on Form A, of which 115 are scorable; on Form B there are 136 items, of which 128 are scorable.

Directions for taking the tests are in the test booklets as well as in the manuals. Practice exercises are not provided. According to the manual, "Each form of the test is to be administered in two sittings of 45 minutes working time each (sic)" (GA, p. 6). Student responses are put on machine-scorable answer sheets. A computer-based system produces reports on student performance by objective category for individuals, schools, and the school system.

¹Maryland Functional Reading Test (Forms A and B), Maryland State Department of Education, Baltimore, 1976. The Guide for Administration, Interpretation, and Use (GA), 1977, will be referred to in the text by the initials GA only without further footnoting.

Standardization, Scores, Interpretation

Standardization

The term standardization does not apply to criterion-referenced tests in the sense of including the development of norms. However, the MFRT was standardized in the sense of being field tested. Standard directions were established and test items were analyzed and selected.

The MFRT was field tested in four stages. First it was administered to 118 students, next to a statewide sample of 2,700 students, then to more than 47,000 students statewide. The final version of Form A was administered to slightly more than 67,000 students in Grade 7 and the final version of Form B to almost 55,000 students in Grade 11. According to the manual, results of these administrations were "analyzed with mathematics appropriate to Criterion-Reference Test Analysis (sic)" (GA, p. 5).

Scores

Only one basic score is obtained from the MFRT: the number of items the student answers correctly by subcategory, category, and total test (raw score). Raw scores are converted to percentage scores, which are simply the percentage of total items answered correctly by category and test. There are no norms as there are on norm-referenced tests.

Interpretation

Raw scores and percent right are given meaning by reference to a "competency level" or competency cut-off score. It was determined that a student should answer correctly at least "80 percent of the items in each category and/or 80 percent of the items on the total test" (GA, p. 14). The eight self-report items per test which are related to Category 5 (reading for personal development) do not, however, contribute to the competency cut-off score.

Reliability

Appropriate criterion-referenced test reliability information has not yet been reported. The Maryland State Department of Education is currently performing a reliability study on the MFRT.

Validity

Construct Validity

The MFRT was developed to measure traits which come very close to being constructs. The test as a whole is said to measure competence in reading functional reading stimulus materials which are keyed to specific objectives (categories of behavior).

The behavioral categories are (1) locating information, (2) understanding forms, (3) gaining information, (4) following directions, and (5) using reading for personal development. They were selected or identified by a committee of educators and submitted for approval to 15 "validation groups representing Maryland citizens" (GA, p. 3).

The functional reading materials are also called "functional reading stimulus materials," materials "needed for functioning in society" (GA, p. 1), or "survival materials" (GA, p. 5). They were classified, identified, and selected by test developers and staff members of the State Department of Education.

Competency is defined by the 80% criterion. According to the manual, "The 80 percent cut-off score was determined by professional judgment taking into account nationally acceptable practices in criterion-referenced test construction..." (GA, p. 14).

Content Validity

Table 3-D-1, which is taken from the manual (GA, p. 2), shows the types of functional reading materials included on the tests by category. The self-report items of Category 5 are not answered on the basis of reading selections.

According to the manual, items to be included on the tests were originally selected on the basis of item difficulty. However, a decision was made to give up this classification and "to include items corresponding to the objectives considered absolutely necessary for survival" (GA, p. 5). The median item difficulty of Form A, based on data from a large statewide sample of students, is reported to be 79%; the median item difficulty of Form B is 81% (GA, p. 6). That is, half of the items on both forms were answered correctly by 80% or more of the student sample. Ranges of difficulty are not given, and it is therefore not possible to estimate the typical difficulty of items below the medians. The distributions of scores on both forms of the test are said to "approximate a truncated normal" curve, with a mean of 85 on Form A and 112 on Form B.

Examples of Tests by Category

Practice exercises which could be used as examples of test items are not provided in the test booklets. To preserve test security, the examples given here are therefore fictitious. They are, however, close parallels of actual items on Forms A and B. Items vary in difficulty within and across forms.

Table 3-D-1*

FORM A
Total Test Questions = 123

Major Categories and Stimulus Materials

- Category 1 - Locating Information from Reference Sources - 30 questions
- Atlas Index
 - Newspaper Contents
 - Almanac Index
 - Trade/Text Index
 - Dictionary
 - Telephone Directory
- Category 2 - Understanding Forms - 21 questions
- Cereal Coupon
 - Mail Order Coupon
 - Cash Register Tape
 - Club Enrollment Form
- Category 3 - Gaining Information - 29 questions
- Weather Map
 - Vocabulary
 - Grocery Advertisement
 - Product Advertisement
 - Menu
 - Textbook Information
- Category 4 - Following Directions - 35 questions
- Game Rules
 - Real Estate Map
 - Basic Signs and Symbols
 - School Schedule and Study Rules
 - First Aid Rules
- Category 5 - Using Reading for Attaining Personal Development - 8 self-report questions

FORM B
Total Test Questions = 136

Major Categories and Stimulus Materials

- Category 1 - Locating Information from Reference Sources - 28 questions
- Telephone Directory
 - Consumer Information
 - Information Table
 - Government Publications
 - Table of Contents - Atlas
- Category 2 - Understanding Forms - 33 questions
- U.S. Savings Bond Application
 - Cash Register Tape
 - Employment Application
 - Social Security Card Application
 - Sales Slip
 - Mail Order Coupon
 - Work Permit
- Category 3 - Gaining Information - 34 questions
- Textbook Information
 - Data on Employment
 - Government Pamphlets
 - Vocabulary
 - Classified Advertisements
 - Consumer Chart
- Category 4 - Following Directions - 33 questions
- Operating Instructions
 - Cooking Directions
 - Road Signs
 - Labels on Bottles
 - Drug, Prescription, and First Aid
 - Consumer Directions
- Category 5 - Using Reading for Attaining Personal Development - 8 self-report questions

*Source is the MFRT manual.

Category 1: Locating Information

The student's basic task is to locate information in various references (see Table 1). Fictitious sample:

In this box is part of a page from a dictionary. Use it to help you with the questions.

at-tach, vb, 1: to take by legal authority 2: to bring into an association

at-tack, vb, 1: to set upon forcefully 2: to assail with unfriendly words

at-tain-ment, n, 1: the act of obtaining or getting possession 2: accomplishment

1. What is the meaning of the word ATTACH?

- A. To get something by stealing it
- B. To hit one thing with another
- *C. To take something legally
- D. To have a lawyer sue someone

Category 2: Understanding Forms

See Table 1 for the list of forms used. Note that Form B, the upper-level test, includes more complex forms than those used on Form A, the lower-level test. Fictitious sample:

Use the cash register receipt to answer the questions.

1. What was the total amount of the bill before tax?

- A. \$6.17
- *B. \$5.87
- C. \$2.79
- D. \$1.58

STAFF GROCERY STORE

0.65	Mt.
1.58	Dy.
2.79	Mt.
0.85	Gcy.
5.87	SB TL
0.30	TX
6.17	

Thank you.

Category 3: Gaining Information

There are two types of items included in this category (see Table 1): those based on reading passages, and vocabulary items which are not based on reading passages. A fictitious example of the first type is:

THE SOUP KITCHEN		
Lunch Menu		
SOUP	CUP	BOWL
Chicken.....	35¢	50¢
Vegetable.....	40¢	55¢
Beef Noodle...	60¢	70¢
Crackers.....	5¢ extra	
Milk.....	25¢ glass	
Coffee or tea....	30¢ cup	

1. When you buy a bowl of vegetable soup for 55¢, what else do you get without additional charge?

A. Crackers
B. Milk
*C. Nothing else
D. A cup of coffee or tea

There are eight vocabulary items on Form A and five on Form B. All are fill-in-blank types like the following fictitious sample:

1. Jim _____ carefully as the other man spoke.

A. listed
B. liked
*C. listened
D. littered

Category 4: Following Directions

See Table 1 for types of materials included on tests. Fictitious sample:

RICH PANCAKES	
1.	Sift 1 cup of Flatto pancake mix into large mixing bowl
2.	Add to bowl 1 cup of milk and stir well
3.	Beat into the mixture 1 egg and 2 tbs. melted butter
4.	Fry pancakes on hot griddle

1. When is the milk added to the bowl?

A. Before sifting the Flatto
B. After beating the mixture
C. After the griddle is hot
*D. Before adding egg and butter

430

Category 5: Reading and Personal Development

These self-report items are not based on reading passages. Fictitious sample:

1. What kind of job would you most like to have when you finish school?
 - A. One that requires a lot of reading.
 - B. A job that requires some reading but not a lot.
 - C. One that requires very little reading.
 - D. A job that requires no reading at all.

Obviously, there are no right or wrong answers to questions of this type.

Discussion

The MFRT was developed as a criterion-referenced test to measure functional literacy. This is consistent with the competency-based testing movement that is prevalent in the United States today. The development of these tests has spread so quickly that there has barely been time to develop the technology needed to support it. As a result, certain problems have accompanied the development and use of such tests. Two of the major problems deal with the following questions:

1. How well does the test differentiate between students who have the competency being measured and those who do not?
2. What skills are needed for minimum competence in a subject area?

Ability of Test to Differentiate

The first question deals with the decision-making validity of the test and is currently being investigated by the Maryland State Department of Education using the emerging technology of criterion-referenced tests. They are performing an analysis of the current MFRT as well as including a validity study in the development of an alternate form. The functional mathematics tests presently being developed by the state will also be subjected to this type of analysis.

Definition of Minimum Competency

The skills needed for minimum competency on the current MFRT as well as on the new functional tests being developed were determined by statewide committees comprised of state and local education officials as well as representatives of school staff. This type of determination is often the subject of much debate. What represents "minimum" competency to one group often seems to be too high or too low to another group. This issue becomes a matter of opinion which no sophisticated analysis will settle.

Quality of Test Items

On a criterion-referenced test each item should measure knowledge or understanding of only one objective. If, for example, an item (question) is to measure a student's ability to gain information from reading, all of the information the student needs to answer the question should be contained in the reading passage itself. If the answer depends on the student's knowing information not contained in the passage, or on the possession of skills which lie outside the bounds of the objective, the ability of the item to measure the objective is questionable. Such items could not be used for diagnostic purposes because they would show what the student failed to do, but the reasons for the failure would be obscured by item ambiguity.

Because of the need to maintain test security, an item-by-item analysis cannot be made of the MFRT. However, almost 20% of the items on Form A and about 11% of the items on Form B require outside knowledge and/or skills not directly related to the objectives they are intended to measure. This same problem is found on most standardized reading tests, sometimes to a greater extent than on the MFRT. Included in the questions requiring specific outside knowledge are the vocabulary items of Category 3 (Gaining Information), which can be answered correctly only if the individual knows the specific words which correctly fill the blanks in the sentences; word meanings cannot be derived from the incomplete sentences themselves. Other items require advanced knowledge of abbreviations which are not explained; of symbols, the meanings of which are not provided; or of shapes of blank "signs" (road signs for example). Some also require the ability to do simple arithmetic even though arithmetic ability is not an intended part of the objective being measured.

Another type of ambiguity which is characteristic of an even larger proportion of items also occurs. Often the language used in directions and questions is more sophisticated than the language used in the reading passage. If a student answers such an item incorrectly, it cannot be determined if the failure is caused by the inability to read the stimulus or the inability to read the question.

Summary

The ideological underpinnings of the MFRT are sound. Reading is an essential skill, and it is the task of the schools to teach all students to read at their highest possible levels of attainment. There is no doubt that the schools should set standards of competence in reading, and that both students and educators should be held accountable for meeting them. A sound criterion-referenced test could help teachers and the school system in general to identify and diagnose reading problems, would set a standard of achievement, and would permit program monitoring. When more data on the MFRT become available, judgment can be made about the soundness of the test.

3-E. SUMMARY OF TEST REVIEWS

The test reviews in this chapter describe the four major tests used system-wide in the Montgomery County Public Schools. The descriptions are followed by discussion of how the tests can be used and the problems of using them in certain ways. These discussions are summarized below.

Iowa Tests of Basic Skills (ITBS)

The tests in this battery provide good norm-referenced (i.e., ranking of students) information about student performance on broad skill areas (e.g., reading comprehension, punctuation, map reading, mathematics problem solving). The use of these tests in a criterion-referenced manner (i.e., student attainment of specific skills) is questionable because (1) there are only one or two questions measuring many of the objectives, (2) items for different objectives have different levels of difficulty, and (3) many items are not specific to one objective. The accuracy of the spring norms for the ITBS that are used in the MCPS and Maryland Accountability Program is in doubt because they were determined by mathematical estimation (interpolation and extrapolation) rather than by actual test administration. It is essential to remember this when a grade equivalent score is reported for a student. Finally, it should be remembered that these tests were designed to be content-valid nationally, not locally, and that validation was done about 1970. While this means the match of the test to the local curriculum will not be as good as that of a locally developed test, the ITBS does measure basic skills that will, for the most part, probably be taught at the same levels as in 1970.

Tests of Academic Progress (TAP)

All of the statements about the ITBS made above apply for the TAP as well. The one major difference to be noted is that the TAP is tied more to specific content than to skills. For example, the social studies section contains questions related to American history, world history, economics, etc. In contrast, the social studies sections of the ITBS measure skills like map reading and locating and using reference materials.

Cognitive Abilities Tests (CAT)

Serious questions about the use of the CAT as a test of "abilities" or "aptitude" are raised. Several of the tests require skills very similar to or the same as those measured by the ITBS. This leads one to the belief that the CAT may, to a considerable extent, be another measure of achievement. While parts of the CAT measure some skills beyond those measured by the ITBS, a student's performance on the CAT will be depressed if the individual's vocabulary, reading ability, and quantitative ability are limited.

In an attempt to demonstrate the construct validity of the CAT, the publisher has provided data on the correlations of sections of the CAT with the Stanford-Binet Intelligence Scale, a widely recognized and individually administered intelligence test. However, these correlations are generally lower than correlations of the CAT with sections of the ITBS, an achieve-

ment test. While it is difficult to prove anything with correlational data, the data do raise questions about the nature of the CAT.

Maryland Functional Reading Test (MFRT)

The MFRT was developed to provide a means of insuring that students receiving a Maryland high school diploma have the minimum reading skills needed for functioning in society. This is a part of the competency-based movement that is prevalent in education today. The review of the MFRT illustrates the problems that are found nationally in minimum competency criterion-referenced tests. Two of these problems are listed below:

1. How well does the test differentiate between students who have the competency being measured and those who do not?
2. What skills are needed for minimum competency in a subject area?

Extensive work is being done at the state level to answer Question 1 for the current MFRT as well as for an alternate form of it, and also for functional mathematics tests that are being developed. The required skills for these tests have been determined by state committees.

CHAPTER 4
TECHNICAL TESTING TERMS

INTRODUCTION TO TECHNICAL TERMS CHAPTER

This chapter is a glossary of the technical terms used throughout this report. Terms are arranged in alphabetical order. The following information is given for each term:

- Definition: self-explanatory
- Use: an explanation of what information can be derived from or what can be done with the statistic or procedure
- Precaution(s): a discussion of the weakness of the statistic or procedure, or of common misinterpretations of the term.

TECHNICAL TESTING TERMS

CRITERION-REFERENCED TEST (CRT)

Definition

A test based on specific learning objectives (or teaching objectives), usually within a narrow range of subject matter or skills. The tests are designed to measure the knowledge or skills the student has attained.*

Use

CRT's provide information about the extent to which the student has attained the learning objective(s).

Precaution(s)

(1) CRT's are often designed so a student can answer all or almost all of the questions correctly or incorrectly depending on the extent to which the student has attained the skills being measured. They are not designed to yield information about different levels of achievement, and therefore cannot usually be used to rank students on specific skills.

(2) To be useful measures of specific skills, CRT's must have a sufficient number of questions measuring each particular skill included on the test. Though what is "sufficient" is not a fixed number, there should, in most cases, be at least five questions which measure a skill. A test purporting to be a CRT which has fewer than five questions per skill should be viewed with skepticism.

GRADE EQUIVALENT SCORES (GE)

Definition

The grade equivalent of a given raw score on any test indicates the grade level at which the typical pupil achieves this raw score. The digit(s) to the left of the decimal point represent the grade; the digit to the right of the decimal point represents the month within the grade according to the following table:

<u>Number</u>	<u>Month</u>
0	September
1	October
2	November
3	December
4	January
5	February
6	March
7	April
8	May
9	June

Use

GE's provide a familiar referent for test scores.

Precaution(s)

(1) The grade equivalent score does not indicate the grade level of work that a student can perform. It simply communicates the grade level of the typical student in the norming sample achieving a given raw score. For example, suppose a third grade student has a score with a grade equivalent of 5.4 on a third grade test. This does not mean that third grade students can do work which is done in January in the fifth grade. It simply means that this student did as well on a third grade test as the typical student in January of the fifth grade.

(2) Grade equivalent scores should not be added and subtracted because they are not an equal distance apart at all points. For example, it is possible that a gain of one raw score point can cause a two-month gain in GE at one point in the score distribution and a five-month gain in other parts of the distribution. This means that the mean of GE's should not be computed. However, computing the mean of a set of GE's is usually very close to the value resulting from transforming to normal curve equivalent scores.

(3) GE's are generally more spread out at higher grade levels. Therefore, a student may be one grade level below the median in the third grade and two grade levels below the median in the ninth grade yet have a higher percentile rank in the latter case. That is, even though the student is further below the typical student in grade equivalent units in the ninth grade, he/she has a higher ranking in the ninth grade norming sample.

(4) Because a grade equivalent score represents the performance of a typical student at a given grade level, approximately half of the students in a nationwide sample would be expected to score below grade level.

INTERQUARTILE RANGE

Definition

Quartiles are scores (points in a distribution) that divide a score distribution into quarters. Twenty-five percent of the scores are below the first quartile (Q1), 50 percent are below the second quartile (Q2, which is also the median), and 75 percent are below the third quartile (Q3). The interquartile range includes the band of scores that lies between Q1 and Q3, or the middle 50 percent of the scores.

Use

By eliminating the effect of the lowest and highest quarters of the distribution, the interquartile range provides a measure of how the typical students in a group performed.

Precaution(s)

None

MEAN

Definition

The sum of the scores divided by the number of scores.

Use

The mean is used as a measure of the score of the "typical" student in a group.

Precaution

In a small group, the mean can be overly influenced by a few extreme scores. Thus, if a few scores in a distribution are very low but most are quite high, the mean will be depressed by the low scores more than the median. In groups where there are a few extremely low scores, the mean will, therefore, be lower than the median.

MEDIAN

Definition

The score that divides a test score distribution in half. Half of the scores are above the median, half are below. It is the score that has a percentile rank of 50.

Use

To obtain a measure of the performance of the "typical" student in a group.

Precaution(s)

None

NORMAL CURVE

Definition

A normal curve is a distribution of scores or values which, in graphic form, is bell-shaped as shown in Figure 4-1. In a normal curve distribution, the mean and the median are at the same point. Scores are clustered around the mean/median and are more dispersed at the extremes of the distribution. Sixty-eight percent of the scores are within one standard deviation of the mean/median and 95 percent are within two standard deviations. Scores which are more than two standard deviations from the mean/median are rather rare.

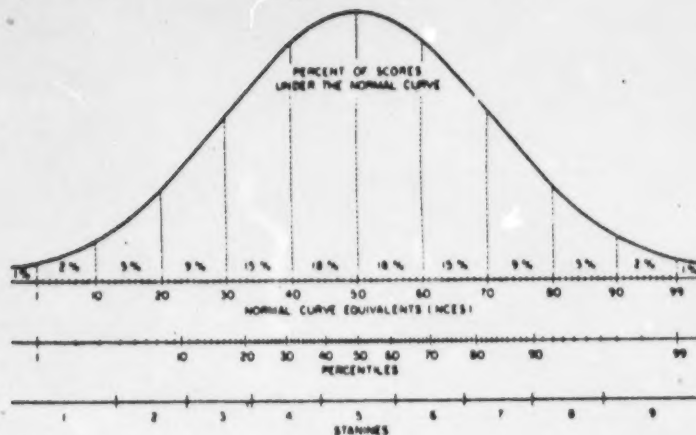


Figure 4-1

Uses

Because of its well-documented statistical properties, the normal curve distribution is often used in reporting test scores as an aid in interpreting scores of groups or individuals.

Precaution(s)

The normal curve distribution is a statistical or mathematical ideal. It is not a graphic description of what a particular distribution should be; distributions which do not conform to the normal curve are not "abnormal." Many variables can affect the distribution of a particular set of scores: test content, difficulty of the test items, suitability of the test for the group to which it is administered, etc.

NORMAL CURVE EQUIVALENT SCORES (NCE)

Definition

The normal curve distribution can be subdivided into equal units in a number of different ways. NCE's divide the normal distribution into 99 segments, units, or scores (Figure 4-1). Scores range from 1-99, with a mean/median of 50. NCE's can be related to percentile ranks as shown in the comparative scales in Figure 4-1.

Uses

(1) NCE's can be subjected to arithmetic operations. Therefore, mean NCE's can be computed, and differences in NCE's can be compared at all points in the score distribution.¹

¹In a strict statistical sense, it is probably incorrect to subject any test scores to arithmetic operations. However, NCE's, standard scores with a normal distribution, raw scores, and stanines come closer than any other score scales to having equal-interval properties which permit arithmetic operations.

NORMAL CURVE EQUIVALENT SCORES (NCE): CONT.

Uses

(2) NCE's can be used in analyses of group data (for reasons above). In addition, NCE's are scaled to reveal small changes, something which stanine scores will not do consistently because of the large score range at each stanine point.

Precaution(s)

(1) NCE's are not good measures of individual performance. A change of five NCE units on a test score is within the error range for individuals on most standardized tests. However, since NCE's give a false sense of precision--and hence of security--the careless test user could consider such a change meaningful.

(2) NCE's are difficult to interpret when presented alone. After an analysis has been performed on the basis of NCE's, results are often converted to some more readily understandable scale like percentile ranks, grade equivalent scores, etc.

NORM-REFERENCED TEST (NRT)

Definition

A test designed to rank students according to the number of test items answered correctly (i.e., according to raw score). Ranking is usually also done in relation to the performance of a norming sample. The Iowa Tests of Basic Skills, Tests of Academic Progress, and Cognitive Abilities Test are examples of NRT's

Use

Norm-referenced tests provide information about which students know the most about the content included on the test.

Precaution(s)

(1) A good NRT is designed to enable between 40-70 percent of the examinees to answer any given item correctly. Many items are therefore too difficult for a majority of examinees to get right. This means that most NRT's are not very good tests of what an individual student knows (as opposed to criterion-referenced tests). Rather, they are measures of who knows the most about the test content.

(2) NRT's often include only one or two questions which measure achievement of a given skill or objective. Information about student performance on a particular objective is therefore not very reliable.

NORMS

Definition

Statistics that describe the test performance of specified groups, such as students in a given grade, age, range, type of community, etc.

Use

Norms provide a way of relating raw scores to a more meaningful score scale such as percentile ranks, stanines, grade equivalents, or a standard score, so that it can be determined how a student performed relative to a "representative" sample of students similar in some way.

Precaution(s)

- (1) Norming samples cannot be perfectly representative of a large group of students. For most major standardized tests, publishers use sophisticated sampling procedures to determine the norming sample. However, there will always be a small error factor. This means that caution must be used when comparing the scores from two different tests or even from two levels of the same test, because the levels may not have been the same group of students. The following is an example of what might happen because of this. If the students in the norming sample for Test A are brighter than those in the sample for Test B, the norms for the two tests will not be equivalent. A student who then takes both tests will be likely to attain a lower percentile rank on Test A because he/she is being compared to a brighter group of students on that test.
- (2) Test publishers often provide norms for different times of the year such as fall, winter, and spring. However, they may not have used a norming sample at all of these times, which means that some of the norms are estimates. A test manual should be consulted to determine when a given test was normed. Estimated norms for any other time of year should be viewed with caution.
- (3) Test norms are not necessarily derived every year, and therefore some norms may be several years old. However, it is common practice to compare current student performance on a given test with the performance of the national norming sample. Caution must therefore be exercised in interpreting the meaning of an individual's status. For example, a student who took a test in 1978 and who achieved a percentile-rank of 60 probably did not score higher than 60 percent of the students taking the test in 1978. Rather, the individual scored higher than 60 percent of the students in the norming sample who took the test in the past, perhaps, for example, in 1970.
- (4) The above considerations may weaken the usefulness of older norms. If changes have occurred in curricula, current students may be better prepared in some skills or subjects than were students in the norming sample, less well prepared, or simply differently prepared. Thus, comparisons of percentile ranks across years may be clouded by changing curricula.

NORMS: CONT.

Precaution(s)

(5) Norms are derived so that half of the representative group is expected to be below average. This means that half of the group will be below grade level, below a percentile rank of 50, below the mean. Therefore, it is extremely difficult to have all of the students in any large group perform above the average.

PERCENTILE RANK (PR)

Definition

The percentage of students in the norming sample who scored below a given score. For example, if a raw score of 30 has a percentile rank of 78, then 78 percent of the students in the norming sample scored below 30.

Use

PR's provide easily interpretable information about how a given student's performance on a test compares to the performance of students in the norming sample.

Precaution(s)

(1) PR's should not be added or subtracted because they are not an equal distance apart at all points. For example, Figure 4-1 clearly shows that an increase of 10 points between percentile ranks 45 and 55 is not the same distance as an increase of 10 points between percentile ranks 85 and 95. A person would have to show a larger amount of improvement to achieve the second increase.

(2) On a test of fewer than 100 questions it is not possible for every whole number of the percentile rank scale to have an associated raw score. Therefore, in such circumstances, a one-point increase in raw score can cause an increase of several percentile rank units. What might appear to be a substantial increase on the percentile rank scale is really only an increase of one additional question correct. This caveat applies to virtually all tests in standardized batteries.

(3) Percentile ranks should not be confused with percent of correct answers (raw scores). They have completely different meanings.

RAW SCORE

Definition

The number of questions or test items answered correctly.

Use

Raw scores can be subjected to arithmetic operations (addition, etc.). Therefore, means of raw-score distributions can be computed and

differences in means of two or more groups can be compared. Tests of statistical significance can be performed with raw scores when scores are derived from the same test.

Precaution(s)

- (1) A raw score has no meaning other than the number of items answered correctly. It provides no interpretative information.
- (2) Raw scores can be quite misleading when reported by themselves because the meaning of raw scores differs from test to test. For example, if one 50-item test is easy and one 50-item test is difficult, a raw score of 30 on the difficult test might represent better performance than a raw score of 45 on the easier test.

RELIABILITY

Definition

Reliability refers to the extent to which a test is consistent in what it measures. There are three major types of reliability, all expressed as a coefficient ranging from 0 (complete lack of consistency) to 1 (perfect consistency).

1. Internal consistency is the degree to which all the questions on a test measure the same thing. For example, a mathematics test that measures only addition of fractions will probably have a higher internal consistency coefficient than one that measures several different mathematical operations. This would be especially important for achievement tests that measure specific skills.
2. Stability is the degree to which a person will achieve the same score on a test that is taken twice within a time period of anything from a few days to a year or two. This is important in an instrument which measures a trait like natural ability which is not expected to change over time.
3. Equivalence is the degree to which a person will achieve the same score on two forms of the same test. This is important for any test in which two forms are to be used interchangeably.

Use

Reliability is a measure of the quality of a test.

Precaution(s)

The type of reliability appropriate for a given testing situation should be used.

STANDARD AGE SCORE (SAS)

Definition

SAS scales are often used to report results on tests purporting to be "intelligence" tests. The mean is 100 and the standard deviation is 16. This means that in a normal distribution, no matter what the age of the persons taking the test the following percentage can be expected to score in each score range:

<u>SAS Range</u>	<u>Percentage of People</u>
133+	2.5
117 - 132	13.5
101 - 116	34.0
85 - 100	34.0
69 - 84	13.5
68 -	2.5

Use

(1) The SAS provides an interpretable score scale for a test such as the Cognitive Abilities Test.

(2) SAS's can be added and subtracted; therefore, the mean can be computed, and differences in scores can be computed and compared.

Precaution(s)

None

STANDARD DEVIATION (SD)

Definition

A measure of the dispersion in a set of scores. The more the scores cluster around the mean the smaller the SD will be.

Use

As a measure of the spread in a set of scores, the SD can be used to assist in determining the degree of importance of score differences. For example, a difference of 2 points would probably not have much meaning if the SD were 20, but could be quite important if the SD were 0.5.

Precaution(s)

None

STANDARD ERROR OF MEASUREMENT (SEM)

Definition

The SEM is an estimate of the magnitude of error in a test score. Possible causes of error in scores include lucky or unlucky guesses, a student's not feeling good or failing to follow directions, the fact that test questions may be only a sample of those that could be asked, etc.

Use

(1) The SEM provides a way of determining the possible fluctuation in test scores which would be obtained if an individual were to take the same test a number of times. It indicates how far a particular obtained score might deviate from the individual's "true" score (the score the individual would obtain if there were no error in the test). It is usually assumed that the scores obtained from repeated testing would conform to the normal curve distribution. Therefore, in practice, it is assumed that there is a probability of 66:100 that the "true" score is within one SEM of the obtained score, and that there is a probability of 95:100 that the obtained score is within two SEM's of the obtained score.

(2) The SEM can be used in significance testing to provide a way of determining whether differences in test scores or group mean scores are statistically significant (that they vary more than can be reasonably attributed to testing error).

Precaution(s)

None

STANDARD SCORE (SS)

Definition

The SS is a score scale often used to report test results. The mean is 50 and the standard deviation is 10. In a normal distribution, the following percentages of people can be expected to score in each score range:

<u>Score Range</u>	<u>Percentage of People</u>
71+	2.5
61 - 70	13.5
51 - 60	34.0
41 - 50	34.0
31 - 40	13.5
30 -	2.5

STANDARD SCORE: CONT.

Use

(1) The SS scale provides an interpretable score scale for achievement tests like the Tests of Academic Progress.

(2) SS's can be added and subtracted. Therefore, the mean can be computed and differences in scores can be compared.

Precaution(s)

None

STANINE

Definition

A stanine is one of the scores of a nine-point division of the normal distribution. Stanine scores range from 1 to 9 with a mean and median of 5. As shown in Figure 4-1, each stanine has a range of corresponding percentile ranks or raw scores.

Use

(1) Stanines can be subjected to arithmetic operations (addition, etc.). Therefore, the mean of distributions can be computed, and differences in stanine scores can be compared at all points in the distribution except at the extreme stanine scores of 1 and 9.

(2) Stanines do not give a false sense of accuracy of a given score because each stanine covers a range of raw scores. The stanine scale is therefore useful for reporting individuals' scores. Differences in stanines are more likely to represent change beyond that which can be attributed to error than are other kinds of scores.

Precaution(s)

As can be seen in Figure 4-1, interpretation of differences in stanine scores is clouded by the range within a given stanine. For example, if an individual's score increases from the top of the stanine-3 range to the bottom of the stanine-5 range, it represents less improvement than an increase from the bottom of the stanine-3 range to the top of the stanine-4 range. However, on cursory examination it would seem as if the first increase were the greater.

STATISTICAL SIGNIFICANCE TEST

Definition

A significance test is a statistical procedure used to determine if two (or more) group means differ more than could normally be expected if testing error or sampling error were assumed to be the cause of the difference.

STATISTICAL SIGNIFICANCE TEST: CONT.

Use

Under highly controlled conditions (as in experiments, etc.), tests of statistical significance are used to test hypotheses.² When variables cannot be controlled (as in the countywide testing program), the test cannot be used in this way.

Precaution(s)

- (1) The test of statistical significance applied to the data in this report accounts only for error in test scores. The standard error of measurement was used to determine this error. Sampling error, which is usually used in significance tests, was not used because almost all students in a given group are tested, not just a sample.
- (2) Results of significance tests are reported as probability statements. If the reported probability is less than .01, the chance is less than 1:100 that the difference in means can be attributed to testing error. If the probability is .001, the chance is less than 1:1000 that the difference can be attributed to testing error. However, there is always some chance (1:1000, etc.) that the difference was caused by error.
- (3) When a large number of tests of significance are performed (as in this report), some differences will turn out to be statistically significant by chance alone. That is, since there is always some chance that a difference can be caused by error (1:20, 1:100, 1:1000, etc.), a certain number of significant differences can be expected to occur because of error. There is no way to determine if a particular statistically significant difference was or was not caused by error. Again, only a probability can be determined.
- (4) The larger the group the smaller the difference in means needs to be for statistical significance. The smaller the group the larger the difference must be. For example, a difference of only 1-2 months on the grade equivalent scale, or a fraction of a raw-score point, will be statistically significant for groups of several thousand students. In contrast, a difference of as much as 6 months may be required for significance with a group of 100 students.
- (5) Many of the tables in this report which present information about statistical significance contain results of several significance tests performed on data derived from the same groups of students. Results within such a table are correlated. Therefore, if one of the differences is statistically significant, there is an increase in the probability

²For example, was there a significant difference in the means of reading test scores obtained from an experimental reading group and from a control group? The research hypothesis would be that the experimental reading program was responsible for higher test scores.

that other differences on the same table will also be statistically significant.

VALIDITY

Definition

The extent to which a test does the job for which it is used. There are three major types of validity that a test may possess.

1. Content validity is most important for achievement tests. This requires a test to contain questions that adequately reflect the content the test is supposed to measure.
2. Criterion-related validity is most important for placement tests, college admissions tests, or tests on which employment decisions are based. Performance on the test must be highly correlated with performance in the program, success in college, or success on the job for which the test is a screening instrument.
3. Construct validity is most important in psychological instruments. Tests of ability are examples of such instruments. Construct validity requires that the test adequately discriminate between people who do or do not have a particular trait.

Use

Validity is a measure or concept that helps one evaluate the quality of a test.

Precaution(s)

The type of validity appropriate for a given testing situation should be used.